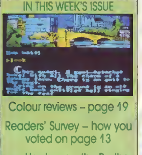
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17-23 July 1986 Vol 5 No 29

Hopes for QL rights sale raised again



IN THIS WEEK'S ISSUE

Colour reviews – page 19

Readers' Survey – how you voted on page 13

Hardware – the Brother M-1109 see p12

- **Sale of QL rights now looks on the cards again**
- **'Active negotiations' taking place with Amstrad**
- **QL suppliers are eager for a decision**

Full details below and inside

NEGOTIATIONS have now begun between Amstrad and a number of QL support companies for the intellectual property rights to the QL technology now owned by the former.

After the announcement of CST's Thor an upgrade machine based on QL boards it looked as though Amstrad although unlikely to do anything with the machine itself would dispute CST's right to use the technology (see *Popular Computing Weekly*, June 26).

Following the establishment, between parties interested in the QL of the QL Suppliers' Association further approaches to Amstrad have been made.

"The future of the QL is under negotiation between certain parties in Amstrad," said Andrew Lucas of Prospero Software one of the main companies in the Suppliers' Association.

"It may well be that a successor to Amstrad will take on the rights to the QL. Certain persons are appearing with sufficiently large cheques," he added.

Lucas would not name the

continued on page 4 ▶

THIS WEEK'S NEWS

- Sir Clive's wafer-scale company seeks £6 [illegible]
- [illegible] new [illegible] 4 ready to go [illegible] UK
- [illegible] – will it ever see the light of day?
- [illegible] tickets [illegible] the [illegible] Music fair


"Hi there! This is the game I've always wanted to write, a really fast, testing arcade game. I love it and I can I stop playing
I hope you get the same feeling of exhilaration as I get every time I play"
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Tony Crowther
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CBM64/128

Contents

◀SOFTWARE

11 Latin Voices
Cheetah has added new sounds to its exciting Drum Kit for the Spectrum

Prestel Link 2
Upgrade your existing software using Cirkit's Prestel link.

READERS' SURVEY

Who are you?

What do you want

What are we going to do about it?

Full report on the Popular Readers' Survey (May 15), begins page 13

Apologies the article on setting up a software company, which we trailed last week has had to be held over due to lack of space

HARDWARE▶

12 M-1109 Printer
Roger Howarth tries out brother's new NLQ printer, successor to the M-1009, and costing just under £200

GAMES▶

15 Adventure Corner
16 Arcade Action
18 Games Reviews
This week's selection includes *Mission AD*, *Hunchback – The Adventure*, *Murder on the Mississipi*, *Fairlight* on the PCW8256
Plus one page in glorious colour

◀PROGRAMMING

20 Amstrad
A full disc directory editor for the CPC machines

21 QL
Add to the power of SuperBasic with new commands from Justin Noad

22 BBC
Now you can print labels, thanks to E B Page's listing

23 Spectrum
Smooth scrolling in machine code

24 Commodore 64
Part one of an extensive machine code monitor

33 Bytes and Pieces
34 Peek and Poke

REGULARS▶

4 News Desk
Commodore's 64C is ready to go in the UK

9 Letters
10 Ziggurat

28 Communications
David Wallin dips into his mailbag, and comes up with some new Bulletin Boards for you to try out

29 Soundcheck
Mark Jenkins finishes off the Micro Music glossary

36 New releases
38 Charts, Hackers

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ABC

How to submit articles Articles which are submitted for publication should not be more than 2000 words long. The articles and any accompanying programs should be original. It is breaking the law of copyright to copy programs out of other magazines and submit them here – so please do not be tempted. We cannot guarantee to return your programs – so please do not send your only copy. **Accuracy** *Popular Computing Weekly* cannot accept any responsibility for any errors in programs we publish, although we will always try our best to make sure programs work.

Commodore to release 64C in a few weeks

COMMODORE S new-style 64C machine should be available in this country in the next few weeks, having been launched in the US at CES last month (see *Popular Computing Weekly*, June 12)

Chris Kaday Commodore UK s acting general manager, said "the 64C will take over from the old 64 in the next few weeks – we ve got the first supplies in now

'The old 64 has more or less sold through now

Kaday expects the first 64Cs to appear in the shops before September s *PCW* Show, where they are expected to be displayed on Commodore's stand

● Commodore UK has now succeeded in hiving off its spares distribution service as part of its slimming-down exercise

HRS Electronics of Birmingham will now handle the distribution service for all the company s machines

We have now transferred spares and warehousing to third parties – National Carriers are running the warehousing for instance' said Chris Kaday 'However the equipment is all still on Commodore s concrete here in Corby so to speak

'You see we're not disappearing down the tubes we're just scaling things down '

Sun sets on software Guild

THE Guild of Software Houses established three years ago has been dissolved

GOSH as it was generally known in its prime did much to attack software piracy

However recently, membership has been dwindling, and its last chairman, Mike Meek of Mikro-Gen, stood down because, he claimed, there was little point in continuing

Launch planned for Spectrum Plus 2

THE Spectrum Plus 2 the Amstradified Spectrum now looks set for a quiet introduction next month, with the new machine also being shown at the *Personal Computer World* show in September on Amstrad's stand Pride of place on the stand is expected of course to go to the Amstrad IBM PC compatible

Clive claims 'world lead' for WSI Technology

SIR CLIVE Sinclair s new company set up to continue development in wafer scale integration, Anamartic, has announced a 'new world lead in semiconductor technology

Anamartic says that its memory storage device, using wafer scale integration techniques is now at final prototype stage However it needs around £6 million in external finance to produce the product commercially

Weiser's stray seek funds

We have a prototype To get that into high volume production more testing and so on is needed, plus the expenses of marketing it " said Malcolm Wilkinson, Anamartic's general manager

We're looking for about £6 million from a mix of corporate investors, venture capitalists people like that '

Anamartic s first WSI storage device is intended to fill the gap between hard disc systems and semi-conductor main memory The company hopes the device will be ready by 1987 to sell on an OEM basis

While WSI was well-known as one of Sir Clive Sinclair's favourite projects in the latter days of Sinclair Research he is adopting a low profile with Anamartic as a non-executive director Anamartic has a staff of 14 – all of whom were previously working on the WSI project at Sinclair's research division Meatated Indeed Anamartic is currently housed at Milton Hall Sinclair Research's old premises

IBM cuts prices of PC range

ASTONISHING as it may seem the incredibly big IBM is feeling the pinch

In a move designed to counter the attractions of the cheap IBM PC clones Big Blue has slashed prices on its basic PC by as much as 25 per cent

The price cuts are in the form of dealer discounts which IBM says are around 18 per cent but one US dealer plans to sell the PC at $1,495 (£950) – down from $1,995 At present there is no indication that the UK will see similar cuts, although Alan Sugar is no doubt watching with interest

Colokkup

There was an error in last week's review of *Colossus Chess 4.0* which said that there was no 2D display option. In fact, there is a 2D display To get it, you press *Shift-Q*, select book openings, prediction ability, line depth parameters and then you get to choose 2D or 3D! Our apologies to CDS, but perhaps a re-write of the manual is in order

Amstrad in talks over QL sales

◄ continued from page 1

main negotiator although he did say that while CST, the prospective manufacturer of the Thor, was actively involved, it would be another company which bought the QL rights

No-one at Amstrad would comment on the negotiations A spokesman said, 'Sinclair products are vested in Amstrad If and when any developments vis à vis this particular product occur we'll announce them '



Thor CST actively involved

Sinclair micros get a bulletin board

A BULLETIN board dedicated to owners of Sinclair computers has been established in north London

Using a special 32-column format, the board will be open to owners of Spectrums, ZX81s and QLs 24 hours a day on 1200/75 and 300/300 baud

Callers need ASCII format software (Prestel-type software won t work) and should set up their systems for 8 data bits no parity one stop bit.

The board itself is available on 01-249 3238 For details of the system, call sysop Stephen Adams on 01-254 1869

Enterprise's plan revealed

BEFORE its demise last month, Enterprise Computers was developing a new micro to follow the Enterprise 64 and 128 which had reached prototype from when the company went into liquidation.

It was intended that the machine pictured here, would comprise a cpu with 320K Ram as standard expandable to one megabyte running a derivative of the Z80 processor and fully compatible with the two previous Enterprise machines. It would also contain the CP/M operating system.

The cpu was to be sold with a monochrome monitor and a $3\frac{1}{2}$ inch double sided double density disc drive plus Prestel software, Supercalc and Superwriter. The company was aiming for a price of £400 for the package.

Now that the company is in receivership, with debts estimated at over £8 million, the future of the prototype machine is extremely doubtful and it may never see the light of day.

Enterprise receives Vulcan mind probe

Amiga's rival boxes clever

AN Amiga rival that was nearly a QL compatible. Such is the Microbox III, according to Jim Rew, of its manufacturer Micro Concepts.

The QL compatibility was to have been a feature, since Tony Tebby author of QDOS began writing a new but compatible operating system called SMS-2 for the Microbox. However after the sale of the QL rights to Amstrad Tebby after this formed his own company, and SMS-2 was no longer considered for the new machine.

In its current form, Microbox III is based on a Motorola 68010 processor with 512K Ram and capable of running three operating systems Tripos OS9 68K, and CP/M 68K.

Three packages are planned a single board version for £650 cpu plus dual $3\frac{1}{2}$ inch floppy discs for £1m100 and cpu plus dual floppy discs and Winchester hard disc for £1,700.

And the Amiga rivalry? 'Looking at the two systems they are very similar. They have the same graphics and sound capabilities same memory size and so on,' said Jim Rew. 'We're looking to sell into engineering companies and colleges, which is one of the target areas for the Amiga but we don't need to sell 10,000 a month to make a living.'

Sidecar to surface at PC User Show

COMMODORE UK is showing the Amiga at this week's PC User Show at Olympia in London together with its Sidecar IBM compatibility option. This is the first time Sidecar has been revealed in this country, although it was announced at the Commodore Show in May.

At the PC Show, however, Commodore is placing emphasis on new accounting packages for the machine. Three are becoming available, *Total Office*, from the company of the same name. *Positive Financial Accounting System* from Positive Software and *Impact Integrated Accounting* from Eidersoft.

Amiga On its bike

Apple opts for IBM

APPLE Computer's upgrade to the Apple II, due to be launched in the US this September (see *Popular Computing Weekly* April 3), will include an add-on to give it IBM PC compatibility it has been reported. The machine is also expected to be fully compatible with the Apple II series.

The basic 512K machine using the Western Design Centre 65816 16-bit processor, is expected to include two $3\frac{1}{2}$ inch disc drives and a monochrome monitor for £1,000. The IBM compatibility will come in the form of a hardware add-on at around £300.

This is the first time Apple has opted for compatibility with IBM.

Competition spot from Ariola

AFTER Spot the Ball and Spot the Difference comes Spot the Screen Shot.

As an added incentive to buy Ariolasoft's games the company has launched a new competition. Inside each game will be a game screen shot.

Scratch the correct title box and you could win a free game, a badge or some money-off vouchers.

And there's a grand draw for a Commodore 128, Spectrum 128, Amstrad 6128 and an Atari 130XE.

BRITISH MUSIC FAIR

Let's Make Music!

Free music fair tickets

THE 1986 British Music Fair, the year's largest exhibition of musical instruments, is to feature a special display on computers in music. And we have 20 free tickets to give away.

The fair, to be held at London's Olympia exhibition hall, brings together hi-tech manufacturers such as Roland, Simmons, Yamaha, Akai, Casio and Ensoniq.

For computer users there's a special section featuring a series of live demonstrations using Apple, BBC, Commodore, and other major makes of computer. Music Sales will be demonstrating its Commodore hardware and software, and there will also be products from OSC, Rittor, Yamaha and many others.

The British Music Fair is open to the public on August 1st, 2nd and 3rd.

To apply for one of the *Popular* free tickets worth £3 each, just send a stamped, addressed envelope to British Music fair tickets, *Popular Computing Weekly*, 12/13 Little Newport Street, London WC2H 7PR. The first 20 to be pulled from the sack get the tickets.

For more details contact Philbeach Events, Earls Court Exhibition Centre, Warwick Road, London SW5, 01-385 1200.

Olympia. Notable venue



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Disc £11.95

At last speech synthesis at a price you can afford. SPEECH! works entirely in software taking up less than 9K of RAM no extra hardware whatsoever is required. Unlike other systems, SPEECH! has an unlimited vocabulary: it will say anything you want it to, and is simplicity itself to use. Simply type in ***SAY I AM A TALKING COMPUTER, AS EASY TO USE AS 1 2 3...** and the computer speaks.

SPEECH! has a built-in parser which translates English words into "phonemes" or speech particles. There are 49 phonemes and 8 different pitch settings which can be used directly by the *SPEAK command (e.g. *SPEAK/HEH4LOW4) so stress or intonation can easily be added wherever desired. You can change the overall pitch with the *PITCH command.

Every copy of SPEECH! comes complete with extra software.
DEMO — shows off all the features,
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Applications in
- games
- education
- business
- utilities

THE RECENTLY RELEASED BBC MICRO VERSION HAS BEEN GREETED WITH ACCLAIM AND INCREDULITY:—

REVIEWS ON BBC-1 AND BBC 2 TV

Saturday Superstore (BBC-1)
"This is knockout! This is great! Wonderful! Very very clever" Fred Harris

Micro Live (BBC-2)
"Really good value!" John Coll

REVIEWS IN THE COMPUTER PRESS

"The reproduction is suprisingly good and certainly on a par with some of the more expensive speech interfaces I have heard An excellent low cost speech synthesiser that really is very good value for money ACORN USER

" Incredibly easy to use. The end result is as good as anything I've heard this side of the Amiga. POPULAR COMPUTING WEEKLY

"Overall an excellent package" MICRONET 800

This is one utility which cannot be beaten on quality or price" The MICRO USER

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Product News

Joyce gets her very own stick

IN RESPONSE to the number of games now being released for the Amstrad PCW machines Cascade Games has announced a PCW joystick interface

Called the Joycestick interface it connects between the 8256 expansion port and a standard *Commodore/* Amstrad joystick

Cascade expects to sell the interface for £24 95

More details from Cascade on 0423 525325

Frontier spells it out on the ST

FRONTIER Software is bringing out a spell checker for the Atari ST, compatible with *First Word, ST Writer Final Word Boffin* and *Habawriter*

Frontier's *Spell-IT* has a 30,000 word expandable dictionary and will retail for £19 95 It should be available from next week

Contact Frontier at PO Box 113, Harrogate, North Yorkshire (0423 63400) for more details

BBC gets graphics transfusion

ONE of the BBC's strongest features is its graphics capability but if it's not enough for you a new peripheral goes even further

The Palettemate colour graphics card gives a colour palette of 4096 shades, 16 of which can be displayed simultaneously in mode 2

The card plugs into the BBC without soldering and RGB output is taken from the micro's existing port The package includes a ROM containing utility software and costs £147

Details from Wild Vision on 091-261 7861

Tandata chops QL comms cost

TANDATA has announced a further price cut on its QL communications products – the second this year

The *QL Comms* package is now down to £80, from £129 Alternatively, the three modules can be bought separately

Q-Connect the RS232 interface and software pack now costs £50 The *Q-Mod* modem is down to £60 and the *Q-Call* software now costs £30

The package sounds like a bargain at £80 especially when at the start of the year it would have set you back £180

Band Aid gets help from Dungeons

THE LATEST fund raising event for the Band Aid Trust is Dragon Aid – nothing to do with the computer but a sponsored marathon Dungeons and Dragons

A team of role-players will be attempting 100 continuous hours of D and D playing at Trafalgar Square in London on July 22. The aim is twofold firstly through sponsorship to raise over £5 000 for Band Aid and secondly to make it into the *Guinness Book of Records*

More information on Dragon Aid from Victoria Kassner at Broadmead House 21 Panton Street, London SW1Y 4DR 01-839 4672

Watford launches Rom expansion

WATFORD Electronics is launching a new Rom expansion card for the BBC B It fits into the processor socket of the machine, and is controlled by software contained within a standard sideways Rom It provides up to 14K more Ram than a 6502 gives to Hi versions of *View*, Basic and *Wordwise Plus*

Details from Watford Electronics 250 High Street, Watford WD1 2AN (0923-3774)

Diary Dates

JULY

16-18 July
PC User Show
Olympia, London
Details: Hardware and software for IBM machines and their compatibles.
Organiser: EMAP 01-608 1161

24-27 July
Acorn User Exhibition
Barbican Centre London
Details Hardware software and peripherals for the Electron, BBC micro and Master machines
Trade only 10am-1pm on 24 July
Price £3 adults £2 children £1 discount for advance sales
Organiser Editionscheme, 01-349 4667

SEPTEMBER

3-7 September
Personal Computer World Show
Olympia, London
Details: Software and hardware for home educational and business computer users. For the first time this year the show is to be organised in three separate halls – business games and education.
Price: £2.
Organiser Montbuild 01-487 5831

12-14th September
6th Official Commodore Computer Show
UMIST, Manchester
Details: A wide range of Commodore hardware software and peripherals. Formerly the Commodore Horizons show
Price £3 adults. £2 children, £1 discount for advance booking
Organiser: Database Publications, 061-456 8383

26-28 September
Electron and BBC Micro User Show
UMIST Manchester
Details: Software, hardware and peripherals for the Electron BBC micro and Master machines. Produced by Acorn.
Price £3 adults, £2 children £1 discount for advance booking.
Organiser Database Publications 061-456 8383

OCTOBER

3-5 October
The Amstrad Computer Show
Novotel, London
Details: Home and business software and hardware for the Amstrad range of computers.
Price: £3 adults, £2 children £1 discount for advanced booking
Organiser Database Publications 061 456 8383

30-31 October
Hampshire Computer Fair
Guildhall Southampton
Details: Business computers and communications.
Price Free entry by business registration.
Organiser Testwood Exhibitions 0703 31557

NOVEMBER

7-9 November
Electron and BBC Micro User Show
New Horticultral Hall, Greycoat Street, London SW1
Details Hardware software and peripherals for the Electron, BBC micro and Master series
Prices: £3 adults £2 children, £1 discount for advanced booking
Organiser Database Exhibitions 061-456 8383

21-23 November
9th Official Commodore Computer Show
Novotel, London
Details: A wide range of Commodore Hardware software and peripherals
Prices: £3 adults £2 children, £1 discount for advanced booking.
Organiser Database Exhibitions 061-456 8383

22 November
The 6809 Christmas Show
Royal Horticultural Hall Westminster, London
Details: Dragon software and peripherals.
Price:
Organiser Microdeal, 0726 6820.

Prices, dates and venues of shows can vary and you are therefore strongly advised to check with the show organiser before attending. *Popular Computing Weekly* cannot accept responsibility for any alterations to show arrangements made by the organiser

Slightly demented

Arrrrggggghhhhhhhhh!! Now I've got that off my chest I'll tell you all a story I am 17, and last year I bought an Amstrad CPC 464 with a disc drive and for Christmas I had a Seikosha SP1000A printer (by the way why didn't you feature it on your printer survey It's a beautiful machine) So far so good But in May of this year 10 days before my guarantee run out my disc drive packed in It totally refused to accept the existence of 3" discs So I sent it to Amstrad

During this time we had a postal strike in Gwent so I waited three weeks patiently for my disc drive after all I had *Tasword 464-D* to play with when it came back (Brilliant wordpro Tasman) It came back in a 464 box with the letter I had put in it stuck on the front On further examination I noticed they had sent me back my disc drive and letter with four extra words, Returned refer to Comet (where I had purchased it)

After some teeth gnashing on my part I sent it to Comet, and guess what, they sent me one back and that doesn't work either I'm going mad I need my disc drive for my 'A' level studies for helping me learn machine code (via *Laser Genius*) I need it for Tasword 464-D I'm so desperate I have written my own Wordpro in five lines of basic

When (if) I get my disc drive back and working does anybody want an Amstrad CPC464 with colour monitor (which buzzes now and then), disc drive and over £250 pounds of software

Yours faithfully
(if slightly dementedly)
Adam Rykala
Gwent

Help for EP44

I refer to the letter from Ms Marjorie Mackintosh of Bletchley that appeared in the June 26 issue concerning the Brother EP44 teleprocessor

She wishes to know if it is possible to make use of the typewriter's international accent signs

The answer is yes – all she needs to do is change the mode setting to the 8-bit code instead ofthe 7-bit typewriter code The table that appears on page 43 of the EP44 manual details exactly what she can achieve in this mode

She will find, however, that she is unable to use the underlining facility in the 8-bit mode writer code

We hope that this answer the query but should you require any further information, please do not hesitate to get in touch.

John Carter
National Sales and Marketing Manager
Computer Peripherals Division
Jones and Brother
Shepley St
Guide Bridge
Audenshaw
Manchester

QL algebra

You recently reiterated your support for the QL. Certainly your confidence in the QL is shared by F R Richardson, author of *Simultaneous Equations, Popular* July 3, who anticipates supreme durability

His program uses Cramer's rule to "solve just about any set of linear simultaneous equations, whether there are just two unknowns or whether there are 50 or more" D M Young and R T Gregory *A Survey of Numerical Mathematics* Addison-Wesley 1973, Volume II, page 790 suggest that Cramer's rule is unsuitable for large systems of linear algebraic equations because of the large number of arithmetic operations involved.

They calculate that a computer running continuously to solve a system of only 20 equations would spend more than 20 million years on the problem! The duration of the computation is a function of the factorial of the number of equations!

Direct elimination methods such as Gaussian elimination are recommended, even for small systems, from the standpoint of accuracy when the computation is carried out by machine apart from the matter of computation time The matter of accuracy may be a restriction of SuperBasic

D W G Thornley
Bishop Auckland

Corrections

I have just purchased *Popular* July 3, and would like to rectify a statement in the Peek and Poke section

Paul Lambert wrote concerning the Atari 520STM and said the modulator can only be used in low-res mode – the Atari information flyer also says this

This is incorrect since I have had my 520STM for a month now and I use it with a portable colour TV connected to the

continued on page 18▶

Puzzle

Puzzle No 217

In the grid below the digits 1 to 9 are arranged so that each of the eight three-digit numbers (arrowed) are *composite* – that is, they have factors other than themselves and one

Apart from the one illustrated there are many other arrangements that can be made This prompts us to enquire if there is an arrangement of digits which will result in eight prime numbers The answer is unfortunately not However, we can have a grid containing seven three-digit primes In this case the centre column (marked with an 'X') should be the only composite number in the eight.

Can you find how this is done?

1	9	8
6	2	3
5	7	4

Solution to Puzzle No 212

Answer 3^{39} contains all ten digits, and is the smallest power of three that does Its full value is 4052555153018976267

As the basic mathematical functions of microcomputers are inadequate for calculating numbers of this magnitude with the accuracy required it is necessary to perform the task in a different way In the program each successive value is stored in a string variable (P$) To find subsequent powers of three each of these values has to be multiplied by three to obtain the next value in the series

This is done by extracting each digit in turn (starting from the units end), converting the digit from a string to a numeric variable performing a simple multiplication, and restoring the unit digit so produced to another string (T$)

Note that after the multiplication stage products with more than one digit are split into a carry variable which is to be carried on to the next stage and a units value which is the value that is converted to the string variable In this way much larger values can be handled with complete accuracy

At each stage the resulting string is scanned to determine if all ten digits are present and only when the string passes this test does execution of the program cease

```
10 LET P$="3"
20 FOR P=1 TO 300000
30 LET T$="":LET CARRY=0
40 FOR F=LEN(P$) TO 1 STEP-1
50 LET N=VAL(MID$(P$,F,1))
60 LET N=N*3+CARRY
70 IF N<10 THEN LET CARRY=0:GO
TO 100
80 LET CARRY=INT(N/10)
90 LET N=N-(CARRY*10)
100 LET N$=STR$(N)
110 LET T$=N$+T$
120 NEXT F
130 IF CARRY>0 THEN LET T$=STR$
(CARRY)+T$
140 PRINT T$,P
150 K=0
160 FOR D=0 TO 9:W=0
170 FOR Q=1 TO LEN(T$):IF VAL(M
ID$(T$,Q,1))=D THEN W=1:NEXT Q
ELSE NEXT Q
180 IF W=0 THEN K=1
190 NEXT D
200 LET P$=T$
210 IF K=0 THEN PRINT "3^";P;"
contains all ten digits":STOP
220 NEXT P
```

Winner of Puzzle No 212

The winner this week is R M Goslington of Bristol who will be receiving £10

Rules

The closing date for Puzzle No 217 is August 12

modulator output. I can use both low-res and med-res in this way

I would not like anyone to be put off buying this excellent machine through misinformadon

Michael Curtis
Mordan
Surrey

Confusion

Some time ago you published my letter about Spectrum quirks and printed the poke as 23750 16

This should have read 23570,16 In case you want to turn this effect off type Poke 23570 6

P Osborne
Romford
Essex

Accolades and praise

I would like answer some of the critics who do not realise what value for money *Popular* is. On a weekly magazine the preparation time must be next to nothing and yet you still bring us up-to-date news and many special features

You can please most of the people most of the time If you are not sent programs and articles for less well-known machines then I do not see how you can help support users who cannot help themselves

I use *Popular* like a newspaper which keeps in touch with the goings-on of other micros and a page for my machine I get a monthly dedicated mag for the nitty gritty and that suits me fine

Mr P Compton
Tedcaster
N Yorks

What a sensitive, perceptive, intelligent chap

Ayo on Atari

The Nigerian game of Ayo referred to in Letters July 3 was computerised as Awari for the ZX81 a few years back However the name of the manufacturer eludes me

By the way can anybody out there the new screen, colour and sound locations when you add a 16K Rampack to a Vic 20?

David Robery
London

Questions and answers

I was interested to read Kenn Garroch s reply to the letter regarding running ZX81 games on the Spectrum (Peek and Poke July 3)

In 1982 a program called *ZX Slowloader* was published by East London Robotics (now in liquidation, I understand) By loading this into a Spectrum, a ZX81 program could then be loaded in and converted to the Spectrum format Of course certain keywords in Basic had to be eliminated or changed but generally it worked exceptionally well I would suggest Alan Franklin looks for a copy

I have been trying to find somebody from East London Robotics to get permission to put up the program on a bulletin board I am preparing the copyright was with the company rather than an individual but the company is no more Can anyone tell me what the situation is over such software copyright?

G Todd
Crawley
Sussex

***Popular* is on the look out for witty, pertinent or unusual letters for which we can give away a free years' supply of *Popular* binders as our Star Letter of the week. Send your thoughts to Letters, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP**

Incidentally, if you are the author of a published Star Letter and you're wondering where the binders have got to, don't worry We've had an administrative hiccup, but they are on their way

Ziggurat

Time to go back to Basic

A reviewer recently wrote about a newly launched computer – the Basic is poor, but who buys a computer for its Basic these days? This is without doubt the most depressing statement that has been made about the condition of home computing today It is all the more poignant because it is true and getting truer

In the days before the Sinclair ZX80 and the Commodore Pet there were computer kits available which were programmed only in machine code because there was not room in their tiny memories for a Basic interpreter. Then there was the brief period when there were quite a number of successfully marketed Basic games until the sophistication of machine coded games pushed them to the margin of the market and finally killed them off altogether Now all arcade games and the vast majority of utilities and adventures are machine coded

Using a commercial program, whether it is an arcade game or a wordprocessing suite should not require any great intellect Writing a program on the other hand, is creative needs technical competence and requires a high degree of involvement The programmer not only computes in its purest sense but also analyses problems, reasons logically, converts ideas into substance and strives for perfection Once the elements of computing are learnt there are more advanced techniques to master such as structured programming designing clear screen layouts, menu structuring developing games and refining brief error-free routines

Of course, the merits listed above apply equally to programming in machine code, but Basic is much more accessible than machine code and it promptly points out programming errors and readily allows corrections to be made Unfortunately, Basic is snail-like, unstructured, offers limited control of graphics and makes relatively slow and dull programs

As the popularity of Basic wanes computer manufacturers can select one of two choices The first option is to manufacture computers without a resident language and go back to the games machine concept championed by Atari With no need for a keyboard these computers would have a joystick and perhaps a number of function keys for more complex games Software would be contained in Roms and the machines would connect to the TV set The Amstrad PCW8256 is a slightly different example of this approach in that Basic with other languages is offered as an afterthought It would be a safe bet to assume that the majority of PCW users would never bother to use Basic at all

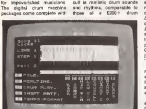
Alternatively, manufacturers can offer an improved Basic which can compete more effectively with machine code The requirements would not be particularly daunting, especially with a 16-bit cpu The language would need to be fully structured include full sprite control have a wide variety of variable and data types and be extendable The ideal Basic for the future would thus be a combination of (much underrated) Sinclair SuperBasic and the excellent games programming dialect offered by Amstrad It would not be good enough to allow home-produced versions of *Knight Lore* but it could be used to write perfectly acceptable *Manic Miner* clones

Finally, and most importantly, future Basics will have to be fast Which will be the first manufacturer to include a Rom-based Basic compiler? A fortune awaits it

Mike Lloyd

SpecDrum Electro Kit a must

Cheetah's *SpecDrum* and the forthcoming *AmDrum* are the most desirable hardware add-ons for impoverished musicians. The digital drum machine packages come complete with powerful composition software, and a set of real drum sounds, digitally encoded on the program cassette. The result is realistic drum sounds and rhythms, comparable to those of a £200+ drum machine.



The great advantage of the *SpecDrum* is that new sound sets can be loaded into the system, and these are being released at a rate of one every couple of months. The first was *Latin Percussion*, and this second sound-set is *Electro Drums*. The electronic drum sound typical of expensive systems like Simmons is very powerful and distinctive and Cheetah's version does full justice to the versatility of the "real" electronic drums.

Included on the set are a reasonable thumpy bass drum, a powerful snare, two excellent toms, "PEOW", a laser' sound, decent electronic hi-hat and cymbal, and finally a clap.

The new sounds can be loaded in their entirety or using the 'kit editor' utility provided on the B side of the tape you can mix and match these sounds and those from other sets to create your own custom sets. This utility also gives you the facility to reverse sounds which can create some stunning effects.

At only £4.99 the *Electro Kit* is a must for every *SpecDrum* owner. Unlike the Latin kit, which is excellent but a little subtle, the electro Kit is a floor-shaking window-breaking ass-kicking rock'n roller, and should be sought out by all serious musos at once. Look out for the African kit – coming up next!

Chris Jenkins


Program *SpecDrum Electro Kit* **Micro** Spectrum **Price** £4.99 **Supplier** Cheetah Marketing, 1 Willowbrook Science Park, Crickhowell Road, St Mellons, Cardiff, 0222 777337

Prestel Link an inexpensive success

Some months ago now we had the first Cirkit Prestel Link hardware and program in for review and I was rather enthusiastic to say the least. For an unprecedented bargain price of £29.99 you could buy an RS232 link and a Protek acoustic modem plus software ready to run Prestel etc on your Amstrad.

The price has gone up now to somewhere around thirty five pounds, but it was and still is a remarkable opportunity for people to test out the world of Prestel and micro-communications for the first time without risking a fortune on expensive equipment. I still don't know of an equivalent package available for less than about ninety pounds and for many people (those without trimphones) Prestel Link may prove to be all that is needed.

However, it has to be accepted that the software comprised probably the bare minimum necessary and Cirkit have now brought out an upgrade for those who have come to terms with their phone bills and want to get more from their Prestel subscription.

The extra features you get are as follows – It is now possible to download software that is being sold on Amsnet or something similar and you can also print out pages from Prestel.

Xmodem file transfer is now possible, allowing you to send and receive files other than just Ascii – a very popular standard with CP/M comms programs.

All external disc commands are also supported and you can display or print Ascii files before sending them. As a final touch keys can be defined to do things such as take you straight to your favourite Prestel page. Other small touches are dotted around, eg a toggle to improve colours for green screen users.

There are one or two minor gripes but I still stand by my initial high opinion.

Tony Kendle

Program *Prestel Link Two* **Micro** Any Amstrad CPC **Price** £14.95 **Supplier** Cirkit Distribution, Park Lane, Broxbourne, Herts EN10 7NQ

Instant Access for Amstrad CPCs

The problem with having a disc containing 170K of data and running a database on an Amstrad, which normally supports only sequential access, is that all the information on a disc has to be loaded in, before being manipulated and then saved back again. Naturally the size of the data which can be treated in this way is limited by the computer's available Ram.

What is needed then is a set of random access filing commands to incorporate into your own programs such as the ones provided by *Instant Access* from Minerva. This package offers 36 extra commands in the format of RX (system extension) calls which include random access, general, sector editing, Basic enhancements and error handling commands.

The usefulness of some of the commands is doubtful and some give the impression of being there merely to make up the numbers. *GVer* for example, simply return the Basic version number. Other commands are much more use. *RDsec* reads a specified sector into the sector buffer and *Spoke* changes a byte in the sector buffer when it gets there. Basically, the commands are a mixed bag.

Exactly how valuable *Instant Access* is depends on how you personally organise your data filing needs. If you, like most people I suspect, use a commercial database, then this package won't be of much use. However, if you are one of those who writes their own data manipulation software then it could be of great value even if it is rather overpriced.

Duncan Evans

Program *Instant Access* **Micro** Amstrad CPC **Price** £29.95 **Supplier** Minerva Systems, 69 Sidwell Street, Exeter, Devon EX4 6PH

A neat little Brother printer

The bottom end of the printer market has undergone a transformation of late Only a year ago a near letter quality (NLQ) dot matrix printer was unheard of for less than £350 Today there s a good selection of them being sold for under £200.

The M1109 from Brother is a NLQ version of the older M1009 It is supplied with RS232 and parallel interfaces friction and tractor paper feeds all as standard It is compact measuring only 33cm × 19cm × 6cm and like most of its competitors, uses standard Epson and IBM control codes For those with a head for figures, it has a 2k data input buffer and another 2k print buffer and prints at a claimed 100 CPS in draft mode and 25 CPS in NLQ However claimed speeds are always inaccurate as the actual speed of a printer will vary with whatever it is printing

Like other printers of a similar price the M1109 tries hard to be flexible It has two fundamental modes of operation Epson or IBM emulation The former offers 12 international character sets the latter only two Within these there are eleven fonts including the usual condensed enlarged sub and superscript NLQ and the not so common, but rather nice, proportional spacing

The front panel has only three switches, a power on/off, on line and paper feed Used in various combinations they also allow the user to select NLQ self test or hex dump modes The NLQ switch is useful if you re in a hurry but I believe such things should really be software driven from your word processor The self test is self explanatory except that it prints out the two DIP switch settings as well which may prove useful during installation Likewise hex dump is invaluable whilst tailoring your printer driver software as it simply prints out all the bytes sent to the printer

Construction

As mentioned earlier, the M1109 is nothing if not compact it is also quite solid weighing 3.5 kg. The two DIP switches are located below and in front of the main carriage underneath a clear plastic cover making them very easy to get at and change with just a pencil Replacing the ribbon is a simple clean job as Brother has opted for the inked cloth cartridge type, which is also cheaper to replace than the carbon ones

Operation

Draft speed is an average of 56 cps NLQ being reasonable at 14 cps Graphics output is of an excellent quality but painfully slow taking up four minutes per screen These figures are quite different from the manufacturer s ones that I mentioned earlier, but all manufacturers seem incapable of reasonably assessing their product s performance

Noise is no more of a problem with the Brother than any other matrix printer, while the quality of output notably proportionally spaced NLQ more than makes up for the little that there is One rather odd thing about the M1109 is that it will only print with proportional spacing whilst in either NLQ or emphasised modes Although NLQ is fine emphasised is probably the most ragged of all the printer s fonts Anyway come on Brother why this limitation?

> *"The M1109 is an impressive little machine"*

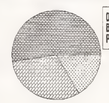
Another more serious problem that I experienced also throws doubts on the M1109 s claims of Epson compatibility, namely that the printer would perform a form feed whenever a vertical tab command was sent As this is how most Epson printer drivers insert the lines between paragraphs this meant in my case that any document would occupy as many pages as there were paragraphs and then some This problem took half a day to sort out and even then only with the help of Bob Courtenay of Computer Specialists to whom I owe my thanks

To be fair this was the only real problem I had with the printer, it worked fine from Basic and from my computer s operating system The bottom line here is as always to find a dealer who will demonstrate the printer that you re interested in working with the computer that you have got.

Conclusion

The M1109 is an impressive little machine Its tiny footprint (a trendy word meaning the amount of space it occupies) and quality output, coupled with a price tag of around £175 make it well worth looking at for home and light office uses The main drawback is perhaps that it can only take paper up to ten inches wide which is A4 to you and me This means that anybody wishing to print out spreadsheets and the like may have to resort to condensed characters or, more likely look elsewhere.

Although the NLQ output is perhaps not as well formed as the best of the competition to my knowledge the M1109 is alone in offering proportional spacing in this price bracket and that can't be bad you pays your money and chooses your fonts **Roger Howorth**



What do you want?

The final results from our readers' survey

A few weeks ago we asked you to complete a survey form so we could find out who you are, what you do, and what you think of *Popular*

Well, after many nights of slaving over a hot database, we've counted heads, sorted, grouped and compared each of you with every other one of you and here are the results

Machines

No big surprises here

Spectrum owners are still the biggest single group, with Commodore and Amstrad owners in pursuit. QL owners formed a remarkably large group of survey senders, but we all know that you QL types are a pretty vociferous bunch

Atari owners – both of the older, 8-bit, machines and the new STs – formed the next biggest group, knocking BBC and Electron owners into sixth place

Bringing up the rear was a mixed bag of minority machines, including MSX, Commodore 16 and *Plus/4*, and there were also a few elitists with Apples, IBMs and sundry other bits of heavyweight hardware

Whatever you machine, most of you are old timers. Nearly three-quarters of you bought your machines more than two years ago. But you like to keep up with events – three-quarters of you have bought new machines in the past two years

Only one in 20 is newcomer, buying your first machine this year

Furthermore, a quarter of you are planning to buy a new machine this year. Atari STs are favourite, with the disc-based Amstrads close behind followed by the Amiga

Peripherals

Big spenders, most of you. Half of you own a dedicated monitor, nearly half own a printer, and two-thirds of you own a disc drive

And you're still not happy. Another 25 per cent will be buying printers and disc drives this year

What we found interesting is that, on the whole, those of you who spend most time playing games own fewer peripherals. It looks as though the arcade action freaks among you are quite happy with nothing more than a cassette player and a sweaty joystick

Computer use

So, what do you do with all this equipment? On the whole there are two camps – those who program and play games on the side, and those who play games with a bit of programming to stave off brain damage

Nearly half of you claimed programming as your main activity, followed by games, word processing, and communications. There were also quite a few dabblers in graphics, music and business use

Basic still reigns supreme among programming languages, but many of you have made the move to machine code. The other languages lag a long way behind

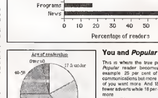
Language	% users
Basic	87 2
Machine code	41 6
Pascal	13 1
Logo	9 6
Forth	9 5
C	7 8
Fortran	5 6
Lisp	0 7

Main use of computer

Music
Business
Graphics
Communications
WP
Games
Programming
0 5 10 15 20 25 30 35 40 45
Percentage of readers

Reason for buying

Arcade Action
Software reviews
Ads
Hardware reviews
Adventure Corner
Games reviews
Programs
News
0 10 20 30 40 50 60 70
Percentage of readers



You and *Popular*

This is where the true perversity of the *Popular* reader becomes apparent. for example, 25 per cent of you want less communications but more than 20 per cent of you want more. And 15 per cent want fewer adverts while 18 per cent of you want more

You did manage to agree on some things. Most of you think we give too much space to the games charts and Arcade Action, while nearly everyone wants more news, reviews and programming features

A lot of you also wanted the return of

Readers' Survey

Ziggurat and the editorial Well as you no doubt noticed, Ziggurat made its return last week, and the editorial will be back soon Your wish is our command

We also asked you what you thought about subjects like business use education do-it-yourself hardware projects and features on new technology As a result, we'll be running regular features on subjects like laser technology CD-Roms, and other developments and a column for book reviews should be making an appearance

Education got the big thumbs down and you don t seem too sure about business and DIY so they re on ice for a while

Who are you?

Putting all this together allows us to create a picture of a typical *Popular* reader (not average but typical) You re probably in your 20s or early 30s, own two machines, a monitor, printer and disc drive

You spend most of your computing time programming in Basic and machine code, with more than a little game-playing as well You read three or four magazines a month – probably *Personal Computer World* and a machine-specific title

We re currently working out ways in which we can continue to give you the most popular features and still cater for some of the minority interests

Stay tuned

Photo by Nick Procopis

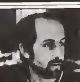
Donations to War on Want

One fairly significant aspect of the Readers survey was, of course, the donation we promised to make to War on Want. Ten pence for every survey received, in fact.

Just to prove that we suited our actions to the word, *Popular's* editor, Christine Erskine, handed over a cheque for £106 to Simon Stocker, deputy general of War on Want, last week

The money will go into War on Want's general fund – the charity specialises in famine relief and supplying practical aid and resources to the developing world, as well as a number of special projects in Eritrea, the Philippines and India





The many faces of adventure magazines

Tony Bridge riffles through the lot

No-one can deny that adventures have really come a long way in the past couple of years, moving from a rather minority-interest pastime to a big business.

Once upon a time there were only a couple of magazines showing any interest at all in the genre, but now every computer magazine has an adventure column. For some reason, magazines devoted entirely to adventures have had a rough ride. *MicroAdventurer*, the only title available in national newsagents, met a sad end after a promising first year, but it persuaded several adventure fans to contemplate starting their own enterprise, with a varying degree of success. Unfortunately some other independent magazines tend to get bogged down by a small circle of hardened adventure fans whose sole purpose in life appears to be imparting the number of games currently solved to other, less intelligent and enlightened, mortals. Roger Garrett's *Guiding Light*, which started very well, seems to have been very quiet for some while, and I can only hope that the Take all and Give nothing, while making snide remarks about everybody else philosophy of may of the subscribers has not overcome the basic soundness of the idea – although it may be that my subscription needs renewing! Try and support the Adventure Club, as it needs to survive.

Nick Walkland's *Orcsbane* is a very much more jolly affair, being a typical example of the fanzine market, with lots of very chatty editorial, the obligatory comic-strip not too unadjacent to certain American publications, and a readership which seems happy just to share with others their love of adventures. The 'zine is packed to bursting with fiction, aforesaid strips, reviews, news, etc, and I find it fascinating. It may well be that amateurs and part-timers simply cannot give the time and attention to running a club that is obviously required, and I'm sure that this is where Henry Mueller and his *Adventurer's Club Ltd* scores over others. Henry is very knowledgeable about adventures (of course, so is everyone else who undertakes these things, as indeed they must be); not only does his club, which has been running now for well over a year now, boast a large number of members, but he sensibly keeps a tight reign on proceedings. The fact that this is a full-time operation really *shows*, and the Club is all the better for it. Having said that, I find that the magazine is pitched in a rather serious tone, though this may be the result of Henry's outlook on life (I mean that he approaches this as a business, which is a good thing). This, combined with the amount of help given, the special offers, discount software and big prizes available, is surely better than histrionics to be seen in other publications.

Let me get on quickly to new faces on the scene. Messrs Gibson and Day write from Bungay in Suffolk about their brainchild *Adventurer's Anonymous*. For £5 a year you get a nice plastic card, six issues of the magazine *Time Traveller* and a Helpline (though they're not yet on the phone). The magazine is the usual blend of news (or rather, comments on the news as there will probably be nothing here that you haven't seen before), reviews, lots of help and the odd short story and illustration. The help is particularly good, being no so much of the step-by-step *W-E-Kill Smurf-Get Dummy-Down* and so on, but rather illuminating discussion on the reasoning behind the various moves. The first issue contains detailed maps and tips for *Mindshadow*, *Worm in Paradise* and *Causse of Chaos* as well as – snock! horror! – yet another solution for the Goblin's Dungeon from *The Hobbit* (interestingly the *disc* version, though this particular problem seems to be about the same as the common or garden tape variety). The next issue promises the solution to *The Price of Magick*, a full review of Incentive's *GAC* and the rundown on CRL's *Very Big Cave Adventure*. The style is good, and is helped along by the interplay between the two editors, who set up between them an exchange of ideas which helps to offset the inevitable staleness and sameness of a solo effort.

I have no idea whether Ron Dawson of West Yorkshire is at it full-time or part-time, but he has been quietly beavering away for some time producing a little monthly booklet of the usual hints, tips, software swap corner, pokes and maps which, as he says, 'will become an invaluable aid for both the arcade and adventure player'. What this boils down to is the usual mix (arcade players get just a few pokes), as seen in most of the others magazines. While there may be nothing here as yet that can't be found in others, *Insight* may well prove to be worth starting with now, as I'm sure that it will get better and better. Readers are starting to reciprocate with their contributions, and I'm particularly pleased to see John Wilson (The Wizard, as he must now be known: you're not a *real* adventurer until you have a nom-de-jeux!) giving others the benefits of his vast experience of adventure-solving.

Ron is anxious to get more feedback from BBC players, so if you're one of the small band, drop him a line. Each issue is £1, and value for money is definitely improving month by month.

If you read all the adventure columns and subscribe to all the adventure fanzines and clubs, you'll notice many of the same names cropping up time and again. A little one-woman campaign seems to have gathered a lot of momentum lately, in the form of Pat Winstanley of Wigan. I've seen her name in almost all the glossy monthlies, and it's a fact that many of the regular correspondents of the The Corner are women. Between them they have decided that, not being able to find what they themselves wanted from a magazine, they would start their own. In fact, they have gone one stage further and started two! *Adventure Probe* is the usual hints 'n' tips, cryptic clues, complete blow-by-blow solutions, in-depth reviews, readers' letters, special offers and a couple of ads for tape-to-disc utilities. Pretty standard, though obviously put together, via a dot-matrix printer, with love and care by enthusiasts. Pat and Sandra ask £1 for each issue.

Adventure Contact is 50p, and is aimed at the player who wants to write his or her own masterpiece. As such, this is a bit of a departure, and although the first issue is a little sparse, it is certainly interesting and sure to become of more use as the months progress.

Adventureline Club (The Guiding Light), 52 Micawber Way, Newlands Spring, Chelmsford, Essex CM1 4UG

The adventurers Club Ltd, 64C Menelik Road, London NW2 3RH

Orcsbane, 84 Kendal Road, Hillsborough, Sheffield S6 4QH

Insight, 41 Union Court, Otley, West Yorkshire LS21 3AS

Adventurers Anonymous, Rivendale, Nethergate Street, Bungay, Suffolk NR3 1HE

Adventure Probe/Contact, 13 Hollington Way, Wigan WN3 6LS



Cheat routines, Ambyte deals and help on the BBC

Tony Kendle with programs and tips

Amstrad has achieved something that many pundits would have once said was impossible – discs are now accepted as a sensible medium for selling games software in the UK. But owners are therefore frustrated when forced to resort to slow and unreliable tapes because of unavailability or high prices of disc software. Salvation is at hand in the form of an imaginative and superb value scheme from Ambyte.

They will sell you a selection of top of the range games on a pirate-proof disc at no more than tape prices, providing any two of the games cost at least fifteen pounds. Early hiccups in availability have been ironed out and more games are offered each month. Write for a new catalogue from Ambyte 200 North Service Road, Brentwood, Essex.

The BBC gets a good showing of tips this week. Robin Williams of Blackheath in London has been inspired to write by Richard Kercher who called for more BBC advice.

"In reply to his problems with *Citadel* here are my tips. The barrel is merely the 'official' way to get into the witches' house; you may use this or one of the two trampolines but the barrel has no other use. A second crown is hidden in the first screen of the witches' house. Go in and kill the monk. Then stand on top of the ladder, jump into the wall and you are there.

"At Stonehenge when the lumps of lead are turned into gold (the old alchemy) which is a crown. In the old days they used to put people in prison for being involved in alchemy but I haven't yet found the crown in the prison.

These two crowns should bring Richard's score up to 99. Secondly I have included a short program which will enable you to play WIZADORE with much more ease.

```
10 *LOAD "WIZADRER"
20 MODE 7
30 INPUT " GO THROUGH ARROWS? " A$
40 IF A$ = "Y" THEN ?&47E3 = &FF
50 INPUT " NO DROPPED SWORDS? " B$
60 IF B$ = "Y" THEN ?&48A8 = &FF
70 INPUT " SUPERSPEED? " C$
80 IF C$ = "Y" THEN ?&5FC8 = &EA
90 CALL &5F14 REM TO START
```

```
10 PRINT"[CLR/HOME]URIDIUM CHEAT BY RICHARD GROOME 1986"
20 FOR A=49152 TO 49202:READ B:C=C+B:POKEA,B:NEXT:IF C<>5936 THEN PRINT"ERROR":END
30 FOR I=1 TO 1000:NEXT
40 PRINT"[CLR/HOME]NOW PUT URIDIUM TAPE IN"
50 SYS49166
60 DATA 162,20,189,33,192,157,198,224,202
70 DATA 16,247,76,0,224,32,44,247,169,9
80 DATA 141,32,208,32,108,245,169,192,141
90 DATA 239,3,76,167,2,169,76,141,65,13
100 DATA 169,249,141,66,13,169,12,141
110 DATA 67,13,108,0,128
READY.
```

Uridium Program

```
10REM GYROSCOPE LIVES HACK
20REM BY IAIN TATCH '86
30MODE7
40T%=0
50FORP%=&6200TO&6243
60READB$:B%=EVAL("&"+B$)
70?P%=B%:T%=(T%+B%*P%)AND&FFFF
80NEXT
90IFT%<>&4E49PRINT''"Checksum error":END
100INPUT''"Number of lives (0-256) ",L%
110?&6224=L%
120CALL&6225
130END
140DATA4C,4F,41,44,20,47,59,52
150DATA4F,0D,4C,4F,41,44,20,47
160DATA59,52,4F,31,0D,4C,4F,41
170DATA44,20,47,59,52,4F,53,43
180DATA4F,50,45,0D,00,A2,00,A0
190DATA62,20,F7,FF,A2,0A,A0,62
200DATA20,F7,FF,A2,15,A0,62,20
210DATAF7,FF,AD,24,62,8D,51,19
220DATA4C,25,19,00
```

BBC Gyroscope Program

Another BBC cheat routine has arrived from Iain Tatch of Chingford who sent in the *Commando* poke we printed a few weeks ago. This time we have a program that will allow you to get extra lives on Melbourne House's *Gyroscope*. Iain writes "due to the fact that the game completely overwrites BBC Basic's workspace the routine has to be written in machine code. It is, however, extensively checksummed.

"Simply enter this program and *Run* it. When asked, enter how many lives you want and the computer should then print the '*Searching*' message. Then insert the Gyroscope tape and play it from the beginning.

"Due to the fact that you are not expected to have more than 9 lives entering a number greater than this will just result in gibberish being printed in the Number of Lives position on screen when playing. Ignore this, the last nine lives will be printed correctly.

On the subject of *Gyroscope* we have fortuitously heard again from the unstoppable team of Julian Lyndon-Smith and Kean Johnston, Yes Hackers Unlimited

have struck again and we bring you pokes for the infuriating *Gyroscope* on the Amstrad. Many tanks are due to Catalyst Coders for their fantastic loading system – it gave us many sleepless nights!!

"We have also managed to get into *Yie Green Beret* – I'm sure you really don't need to ask.

Anyway back to *Gyroscope*, "The listing must be typed in and saved. To obtain infinite lives simply rewind the tape and run this program. gyroscope will load as

```
0 MODE 1:CALL &BB4E:CALL &BBFF:add=&A000:MODE 0
0 FOR i=80 TO 130 STEP 10
0 FOR j=0 TO 20: READ a$:a=VAL("&"+a$):POKE add,a:add=add+1:sum=sum+a:NEXT
0 READ a$:a=VAL("&"+a$):IF sum<>a THEN PRINT"data error in line :";i:END
0 sum=0:NEXT
0 MEMORY &2FFF:LOAD"gyroscope":CALL &3A6A
0 LOAD"!",&4B00:CALL &A000
0 DATA F3,21,00,4B,11,00,BB,01,F1,01,ED,B0,21,24,A0,E5,21,3B,A0,E5,33,0899
0 DATA 33,21,01,BB,11,01,BB,01,F0,01,3E,95,C3,39,A0,21,45,A0,E5,21,3B,0785
00 DATA A0,E5,33,33,21,47,BB,11,47,BB,01,F1,01,3E,9A,ED,4F,ED,5F,AE,77,0999
10 DATA ED,A0,E0,3B,3D,EB,3E,3D,32,46,BB,3E,00,32,31,BB,32,5B,BB,11,65,0890
20 DATA AA,ED,53,EF,BC,21,64,A0,01,20,00,ED,B0,C3,BF,BC,3E,00,32,2B,53,09A4
30 DATA CF,BB,88,00,00,20,42,49,4E,01,00,FF,59,48,45,41,4C,54,48,20,42,0649
```

Amstrad Gyroscope Program

normal (well nearly – we have modified the loader a bit) and then play as normal but with endless lives."

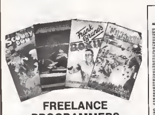
Now then another program that I felt badly needed a cheat routine is the excellent, addictive, but tricky *Uridium* for the Commodore 64 from Hewson Consultants.

I was therefore extremely pleased to receive the following routine from the 'Richard J Groome Hacking Co' based at Maldon in Essex.

Richard also has promised some further *Kung Fu* and *Daley's Decathlon* and more and will send these in soon.

We are now looking for another Amstrad challenge – do you or any of your readers have one for us?" Well's whole list comes to my mind – Amstrad *elite*, *Equinox*, *Zoids*, *Tau Ceti*, *Technician Ted*

cheats and stuff soon and I am very much looking forward to that. In the meantime the *Uridium* routine should be typed in and run and the tape should start to load. Richard warns that you should leave the keyboard alone until the game has loaded or it will mess up the whole thing.



A collection of all your C-16 favourites

Compilations are all the rage at the moment and so is the C16 Initially something of a failure it's now established itself as a good micro for the games market and plenty of manufacturers have leapt on the bandwagon and started churning out largely undistinguished C16 games

Melbourne House was one of the first companies to support the C16 and this retrospective package gives a good idea of both the strengths and the limitations of the machine which can be thought of as a 16K Vic 20 with better colour without stretching the truth too far

Dark Tower, at the time of its release the best thing of its kind for the C16, features a blobby adventurer trying to penetrate the tower and regain his human form It's a fairly standard platforms-and-ladders effort in which your aim is to move ever upwards, and to avoid the various baddies Oh yes, and there are jewels to collect big surprise Doesn't work on the Plus/4 incidentally

Roller Kong is an adequate 'Kong' variant, with rolling barrels and fire-bombs ases to collect and fair maidens to rescue Not bad but a bit easy

Classic Adventure is just that – the classic adventure game Using the usual two-word verb-noun commands, the game takes you through a maze of caverns, seeking hidden treasures and battling ferocious beasties in glorious TextOnlyVision

Lastly, *The Wizard and the Princess*, a genuine Vic 20 conversion, is an arcade adventure in which you use magic spells (choice of five) and your swift sword to defeat dragons, sorcerors and evil magic The screen consists of a map through which you move your little prince and a data window showing your strength and magical ability The progress of battles is printed out below the map display Overall *The Wizard and the Princess* is perhaps the most enjoyable of the games despite its primitive graphics

A good value package for £7 95.

Popular appeal ◆ ◆ ◆

Chris Jenkins

Program *C16 Greatest Hits* **Micro** C16 **Price** £7 95 **Supplier** Melbourne House 60 High Street, Hampton Wick, Kingston-upon-Thames, Surrey, 01-943 3911

Fairlight offers a fair deal

There are adventure games and there are arcade games – and somewhere in between lies *Fairlight*

At first sight, *Fairlight* looks like a medieval *Batman*, seen from a high vantage point in a beautifully realised 3D castle There the similarities end While the adventures of the Caped Crusader present the player with specific problems Isvar has the whole of Castle Avars to roam for clues before he can return home to tea and crumpets

Fairlight's plot is that Isvar, a simple serf has been whisked away to the seated and mysterious edifice by the wizard who is imprisoned in its portals His mission is to find the Book of Light which will end the awful darkness that has cursed the land with high electricity bills

The unique thing about *Fairlight* is its credible feel There is no one way to save the land no one way round the castle, which is so accurately planned that carefully mapping it can reveal secret passages

Every object and creature has its own weight so that a light key will slide further than a table and Isvar can't carry more than one barrel There's also the best selection of monsters this side of Scandinavian folk-lore, and if you only give it some thought there's even a way to stop them reincarnating

Obviously the Joyce misses out on the superb music of the previous versions but there are footsteps and battle effects that could be the clash of steel, though I think they're more like the squeaking of rusty armour There is a rather long blackout between each screen but as you play this gets less noticeable

Even if you found the rigours of Batman rather too much, try *Fairlight*. There's something totally magical about this game as it slowly draws you under its spell

Popular appeal ◆ ◆ ◆ ◆

Paul Svycarsky

Program *Fairlight* **Micro** Amstrad PCW 8256/8512 **Price** £14 95 **Supplier** The Edge 12-13 Henrietta St London WC2

Mermaid Madness

I have to admit that the basic premise of *Mermaid Madness* is a little out of the ordinary In the game you play a bulging mermaid who has to rescue a trapped diver, the object of her affections, while drinking bottles of stout along the way

After passing the title page one of the worst I've seen in ages, the game starts with Myrtle the mermaid chasing the diver off the end of a pier and diving into the briny with a feeble rendition of a tune from *The Nutcracker* beeping away Before long you'll discover the sunken liner under which the unfortunate diver is entombed Getting him out is not that easy aho reveals *Mermaid Madness* to be an arcade adventure type game with the usual collect object and solve problem element

Electric Dreams is calling the game an 'arcade comedy' and doubtless vegetables everywhere will find this a great laugh The graphics are poor and the sound effects sparse Colour attribute problems abound and the graphic blob representing Myrtle has a tendency to become scrambled whenever an object is manipulated Myrtle resumes here bloated shape on moving but it is an indication of the overall quality of the program

If this was on a £1 99 budget label, well, then fair enough To charge just under ten pounds is unbelievable An arcade comedy? No

Popular appeal ◆

Duncan Evans

Program *Mermaid Madness* **Micro** Spectrum **Price** £9 95 **Supplier** Electric Dreams, 31 Carlton Crescent Southampton SO1 2EW

The Hunchback on Spectrum superb

It's rather difficult to understand the thinking behind the reappearance of Quasimodo after all these years. His fifteen minutes of micro fame were so long ago many people won't remember the jumping and dodging original arcade hits.

I seem to recall that his adventure appearance was actually advertised may moons ago – as with so many other Ocean releases – and I suppose it's heartening that, like a BR train, it arrived... however late!

Hunchback – The Adventure gives me a hunch that it was also released to exploit Ocean's *Never Ending Story* system in that it is graphically superb, with the main picture containing inventory icons, character mug shots and even event and action illustrations. *The Quill* has nothing on this.

While its predecessor's unfortunate habit of letting text scroll too fast across the screen appears to have been eradicated, there's an odd repeat on letters at times, giving anything from two to ten stutters.

The plot is basically the same as the arcade game's -rescue Esmerelda, who is held by the evil cardinal. It's all amusingly written, with a variety of bad taste references to Quasi's disability. It's also vast, with three sections of data to load in after the initial code.

Somehow I still don't feel that adventure writing is Ocean's forte. While this could well appeal to the less committed or experienced player, few true addicts will be satisfied with an adventure that doesn't allow *Examining!* That's a pity because the description and humour certainly wouldn't go amiss in more traditional offerings – and this does look superb.

Popular Appeal ◆◆◆

John Minson

Program *Hunchback – The Adventure* **Micro** Spectrum 48K **Price** £7.95 **Supplier** Ocean, 6 Central St, Manchester M2 5NS

Hunchback – The Adventure

Unconventional and thought provoking

Of course, one of the occupational hazards of being an industrial spy is that you keep falling through Time Warps... er... at least that's what Odin would have you think in its latest yarn for the 64, *Mission AD*.

Having fallen foul of this unconventional burglar alarm, you find yourself (dressed as a private straight out of the Afrika Corps) in a futuristic city with the task to liquidate nominated baddies (the ones on the first level are tastefully dressed in turquoise), while zapping and avoiding resident defensive droids and soldiers – and trying not to wipe out the odd friendly native. Got that? On loading, the game quickly impresses – big, bold graphics, good animation and the excellent sound and music soon establish a great atmosphere. Then it begins to fall a little flat.

'Is this all there is to it?' you ask, as you scythe through the opposition, while getting thoroughly done in yourself. There is a clue in the instructions – you have a 15 minute time limit for a task that (running back and forth between the different quarters of the city – each with their distinctive settings) you would expect to take no more than five. Yet attempting to take this long gets you killed very quickly. Ergo – not only is Socrates a fish, but Odin are expecting you to use your brain a bit. What? A zapper with the necessity for thought? A strange concept indeed. The fact is, those wishing to disengage the offending organ while playing will waste their money on this – you just can't do it like that.

Dissatisfying as a straightforward zap then, but if you want something a bit offbeat and feel you can risk a tenner, try it.

Popular Appeal ◆◆◆

John Cook

Program *Mission AD* **Micro** Commodore 64 **Price** £9.95 (tape) £14.95 (disc) **Supplier** Odin Software, 74 New Oxford St, London WC1

Mission AD

Disc directory editing made easy

DireEdit provides an easy directory management function with one key *Erase*, *Rename* *Unerase* and a host of other functions

Type in the program, correct any mistakes and save it. Insert the disc you wish to examine and type *Run* Enter A or B when prompted for the drive, and the first of four pages containing the directory will be loaded

You now have ten options available, each accessed by pressing a function key

- f0 – Quit program
- f1 – Renames the file indicated by pressing A to P corresponding to the letter beside each filename
- f2 – Erase the file
- f3 – Reclaims any file visible that has been erased
- f4 – Toggles between *Sys* and *Dir* With *Sys* set the filename will not be seen with *Cat* and *Dir*, and requires the CP/M command *Dirsys* to reveal it. With *Dir* set, *Cat* and *Dir* work normally
- f5 – Toggles between RO and RW With RO set, the filename cannot be erased without an error occuring
- f6 – Change *User* area. If a file is set to *User n*, the *Amsdos* command *User, n* is required before it can be seen with *Cat* and *Dir* However files with Sys set (f4) are available to all *User* areas
- f7 – Copies altered page to disc
- f8 – Next page of 16 directory entries (out of 64) Pressing f8 when on page 4 will return you to page 1
- f9 – Restart program to select a new disc or drive

The program will work with both System and Data format discs The format is automatically detected and is shown at the top of the screen along with the drive and page numbers

Files of over 16K in length are stored in tow or three entries so make sure you alter each entry in the same way or strange things may happen The following table shows the format of the directory which is exploited by the program

Each entry takes up 32 bytes

Byte 0	=	0-15 user number or &E5 erased file
Byte 1-8	=	filename, padded out with spaces
Byte 9-11	=	suffix, padded out with spaces
Byte 9	=	Bit 7 set read only file Bit 7 off read/write file
Byte 10	=	Bit 7 off *Sys* format Bit 7 off *Dir* format.
Byte 12-15	=	not used by DirEdit.
Byte 16-31	=	each contains sector number (if used)

```
10 '  Amstrad DirEdit
20 '  by Alastair Scott
30 '
40 MEMORY &7FFF:MODE 2:INK 0,2:INK 1,26:
BORDER 2
50 GOSUB 960
60 GOSUB 330
70 GOSUB 250
80 GOSUB 380
90 GOSUB 420
100 GOSUB 430
110 GOSUB 540
120 WHILE NOT flag
130 IF NOT INKEY(15) THEN MODE 2:CALL &B
C22:END
140 IF NOT INKEY(13) THEN GOSUB 640
150 IF NOT INKEY(14) THEN GOSUB 710
160 IF NOT INKEY(5)  THEN GOSUB 720
170 IF NOT INKEY(20) THEN GOSUB 730
180 IF NOT INKEY(12) THEN GOSUB 760
190 IF NOT INKEY(4)  THEN GOSUB 790
200 IF NOT INKEY(10) THEN GOSUB 820
210 IF NOT INKEY(11) THEN GOSUB 870
220 IF NOT INKEY(3)  THEN GOSUB 830
230 WEND
240 flag=0:GOTO 90
250 PRINT t$
260 PRINT:PRINT"Which drive? (A or B)"
270 d$="":WHILE d$<>"A" AND d$<>"B":d$=U
PPER$(INKEY$):WEND
280 :DRIVE,@d$:dr=ASC(d$)-65
290 CALL &900E:loc=FNdp(&BE40)+10
300 sec=PEEK(FNdp(loc+15*dr)+15):st=sec
310 IF sec=&41 THEN a$="System":POKE &90
E5,2 ELSE IF sec=&C1 THEN a$="Data":POKE
 &90E5,0 ELSE 920
320 RETURN
330 RESTORE 1060:FOR a=&900C TO &90DC
340 READ a$:POKE a,VAL("&"+a$):cs=cs+PEE
K(a)
350 NEXT
360 IF cs<>11519 THEN PRINT CHR$(7)"DATA
 ERROR"
370 RETURN
380 WINDOW#1,1,80,3,3:WINDOW#2,1,80,22,2
5:WINDOW#3,1,80,4,21
390 PRINT t$
400 RESTORE 1020:FOR a=3 TO 12:READ t$:L
OCATE#2,1+23*((a-3)MOD 3),a\3:PRINT#2,t$
:NEXT
410 RETURN
420 CLS#1:PRINT#1,"Drive "d$".  "a$" for
mat.  Page"pa+1"of 4.":RETURN
430 BORDER 15:POKE &90E4,dr:POKE &90E6,s
c:POKE &90E3,0:CALL &9081:FOR del=1 TO 2
000:NEXT:BORDER 2
440 IF PEEK(&90E3)=&FF THEN 920
450 GOSUB 900:CLS#3
460 FOR a=1 TO 16:st=FNst
470 FOR b=st+1 TO st+11:file$(a)=file$(a
)+CHR$(PEEK(b)AND &7F):NEXT
480 IF PEEK(st+9)AND &80 THEN rw(a)=0 EL
SE rw(a)=1
490 IF PEEK(st+10)AND &80 THEN sys(a)=1
ELSE sys(a)=0
500 us=PEEK(st):IF us=&E5 THEN er(a)=1
510 IF us>=0 AND us<&10 THEN user(a)=us
520 FOR b=16 TO 31:IF PEEK(st+b) THEN le
(a)=le(a)+1
525 NEXT b,a
530 RETURN
540 FOR a=1 TO 16:GOSUB 550:NEXT:RETURN
550 LOCATE 1,4+a:PRINT CHR$(64+a)" ";
560 IF file$(a)="" OR file$(a)=STRING$(1
1,101) THEN PRINT"UNUSED"SPACE$(50):RETU
RN
570 PRINT file$(a);TAB(16);
580 IF er(a) THEN PRINT"ERASED"SPACE$(50
):RETURN
590 PRINT USING"User ##";user(a);
600 IF sys(a) THEN PRINT"  SYS set   ";
ELSE PRINT"  DIR set   ";
610 IF rw(a) THEN PRINT"Read/write   ";
ELSE PRINT"Read only    ";
620 PRINT USING"##K long";le(a)
630 RETURN
640 GOSUB 890
```

```
650 fi$="":WHILE LEN(fi$)>8 OR fi$="":LO
CATE#1,40,1:INPUT#1,"Filename (up to 8 c
haracters) ",fi$:GOSUB 420:WEND
660 su$="":WHILE LEN(su$)>3 OR su$="":LO
CATE#1,40,1:INPUT#1,"Suffix (up to 3 cha
racters) ",su$:GOSUB 420:WEND
670 fi$=fi$+SPACE$(8-LEN(fi$)):su$=su$+S
PACE$(3-LEN(su$))
680 n$=UPPER$(fi$+su$):file$(a)=n$
690 FOR b=1 TO 11:POKE loc+b,ASC(MID$(n$
,b,1)):NEXT
700 GOSUB 420:GOSUB 550:RETURN
710 GOSUB 890:POKE loc,&E5:user(a)=&E5:e
r(a)=1:GOSUB 550:RETURN
720 GOSUB 890:POKE loc,0:user(a)=0:er(a)
=0:GOSUB 550:RETURN
730 GOSUB 890:sys(a)=1-sys(a)
740 k=loc+10:IF PEEK(k) AND &80 THEN POK
E k,PEEK(k)-&80 ELSE POKE k,PEEK(k)+&80
750 GOSUB 550:RETURN
760 GOSUB 890:rw(a)=1-rw(a)
770 k=loc+9:IF PEEK(k) AND &80 THEN POKE
 k,PEEK(k)-&80 ELSE POKE k,PEEK(k)+&80
780 GOSUB 550:RETURN
790 GOSUB 890
800 usr=-1:WHILE usr<0 OR usr>15:LOCATE#
1,40,1:INPUT#1,"User (0-15) ",usr:GOSUB
420:WEND
810 POKE loc,usr:user(a)=usr:GOSUB 550:R
ETURN
820 LOCATE#1,40,1:PRINT#1,"Are you sure?
 (Y/N)"
830 s$="":WHILE s$<>"Y" AND s$<>"N":s$=U
PPER$(INKEY$):WEND
840 GOSUB 420:IF s$="N" THEN RETURN
850 BORDER 9:CALL &90C3:FOR del=1 TO 200
0:NEXT:BORDER 2
860 RETURN
870 flag=-1:pa=(pa+1)MOD 4:sc=sec+pa:RET
URN
880 RUN
890 LOCATE#1,40,1:PRINT#1,"Which file? (
A-P)"
900 p$="":WHILE p$<"A" OR p$>"P":p$=UPPE
R$(INKEY$):WEND
910 GOSUB 420:a=ASC(p$)-64:loc=FNst:RETU
RN
920 MODE 1:INK 2,24,6:PEN 2:LOCATE 8,10:
PRINT"DISC READ OR WRITE ERROR!":PEN 1:C
ALL &BB18:END
930 ERASE file$,user,rw,sys,er,le
940 DIM file$(16),user(16),rw(16),sys(16
),er(16),le(16)
950 RETURN
960 ti$=CHR$(12)+CHR$(24)+" Amstrad DirE
dit "+CHR$(164)+" Alastair Scott and PCW
 "+CHR$(24)
970 cs=2:pa=0:flag=0
980 DEF FNst=&9000+(a-1)*&20
990 DEF FNdp(a)=PEEK(a)+256*PEEK(a+1)
1000 GOSUB 940
1010 RETURN
1020 DATA f1  Rename file,f2  Erase file
,f3  Unerase file
1030 DATA f4  Toggle SYS and DIR,f5  Tog
gle RO and RW,f6  Change USER
1040 DATA f7  Copy page to disc,f8  Next
 page,f9  Restart program
1050 DATA f0  Quit program
1060 DATA 00,00,dd,21,dc,90,21,db,90,cd
1070 DATA d4,bc,dd,75,00,dd,74,01,dd,71
1080 DATA 02,21,dc,90,cd,d4,bc,dd,75,03
1090 DATA dd,74,04,dd,71,05,c9,21,00,00
1100 DATA ed,5b,e4,90,3a,e6,90,4f,df,ed
1110 DATA 90,d2,d5,90,c9,21,90,90,ed,5b
1120 DATA e4,90,3a,e6,90,4f,df,e0,90,d2
1130 DATA d5,90,c9,3e,ff,32,e3,90,c9,34,
85
```


Additional uses for SuperBasic on QL

The program in listing 1 adds four new procedures and one new function to SuperBasic (SB)

Two memory management routines are provided The *Alchp* function allocates space from the common heap area in a similar way that *Respr* does from the resident procedure area Two parameters, however are required firstly the number of bytes space required and secondly the job ID for which the space is required (this will generally be −1 for the current job meaning SB or 0 which is SB s job ID)

eg *start = Alchp(1024 − 1)* returns start' as a pointer to the 1024 byte space allocated to SB

Rechp is a procedure which releases an area of the common heap which has previously been allocated An error message is displayed if the address given as the parameter is not the start of an allocated heap space in the common heap area Thus, one parameter is required as the start address of a heap space

eg *echp(start)*

A facility which transposes the ink and strip colour belonging to a screen driver channel is provided through the procedure *Invert* One optional parameter may be given to represent the channel number If no channel number is given channel #1 is taken by default Note that the paper colour is unaffected and that altering the paper colour causes the strip colour to take on the colour of the paper automatically

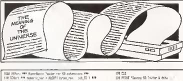
eg, *Invert #2*

The Blank and Unblank procedures, simply switch the display control register on and off The contents of the display *Ram* are unaffected so it may be written to whilst the display is blank Unblanking the display will reveal the display contents as they were before blanking or after updating thus screen images may be constructed whilst the display is blank and then made to appear instantaneously by unblanking the display Note that issuing the mode command will cause the display to be unblanked if it was previously blank

eg *Blank* all of the display goes black *Unblank the display is restored*

Place a microdrive cartridge in *Mdv1* and type in an *Run* listing 1 All five of the new keywords are now available for use

For subsequent sessions type
start = RESPR(932)
LBYTES mdv1_qllib1_obj start
CALL start




```
100 REMark *** SuperBasic loader for SB extensions ***
110 REMark *** numeric_var = ALCHP( bytes_req , job_ID ) ***
120 REMark *** RECHP( addr of heap_space alloc ) ***
130 REMark *** INVERT (channel) ***
140 REMark *** BLANK ***
150 REMark *** UNBLANK ***
170 CLS
180 PRINT "Saving SB loader & data ..."
190 SAVE mdv1_qllib1_bas
200 PRINT "Moving data ..."
210 len_of_code=932
220 start=RESPR(len_of_code)
230 RESTORE
240 addr=start
250 REPeat load_obj
260   IF EOF THEN EXIT load_obj
270   READ byte
280   POKE addr,byte
```

Programming: QL

```
290 addr=addr+1
300 END REPeat 'end_obj'
310 PRINT Saving object code
320 SBYTES mdv1_qlib_obj,start,len of code
330 CALL start
340 PRINT Finished
350 STOP
360 DATA 72, 238, 32, 96, 67, 280, 0, 16, 52, 120
370 DATA 1, 16, 78, 146, 66, 120, 76, 223, 6, 4
380 DATA 78, 117, 0, 4, 0, 92, 5, 82, 69, 67
390 DATA 72, 80, 2, 190, 6, 73, 78, 86, 68, 82
400 DATA 94, 0, 2, 64, 5, 66, 76, 68, 70, 75
410 DATA 3, 60, 7, 85, 78, 66, 76, 65, 78, 75
420 DATA 0, 0, 6, 0, 1, 148, 5, 65, 26, 67
430 DATA 72, 60, 0, 0, 72, 231, 112, 224, 12, 128
440 DATA 255, 255, 255, 224, 116, 0, 0, 58, 102, 0
450 DATA 47, 250, 0, 98, 96, 0, 6, 26, 12, 128
460 DATA 255, 255, 255, 232, 102, 0, 67, 250, 0, 62
470 DATA 96, 0, 0, 22, 12, 128, 255, 255, 255, 232
480 DATA 102, 0, 67, 250, 0, 74, 96, 0, 0, 6
490 DATA 112, 255, 96, 10, 145, 208, 52, 128, 0, 200
500 DATA 78, 146, 74, 128, 76, 223, 7, 14, 78, 117
510 DATA 0, 7, 98, 188, 11, 99, 107, 22, 116, 97
520 DATA 98, 108, 10, 32, 108, 112, 108, 106, 18, 0
530 DATA 0, 25, 108, 97, 116, 99, 32, 104, 97, 115
540 DATA 32, 98, 101, 101, 110, 32, 99, 111, 109, 112
550 DATA 114, 101, 115, 115, 101, 100, 10, 0, 0, 24
560 DATA 104, 101, 97, 112, 32, 97, 114, 101, 97, 32
570 DATA 110, 111, 116, 32, 97, 108, 108, 111, 99, 97
580 DATA 116, 101, 100, 10, 72, 231, 98, 32, 102, 203
590 DATA 103, 22, 0, 54, 0, 7, 194, 1, 103, 24
600 DATA 47, 13, 75, 255, 0, 9, 47, 13, 92, 128
610 DATA 1, 18, 78, 146, 36, 95, 42, 95, 102, 46
620 DATA 58, 54, 152, 0, 112, 241, 12, 129, 208, 255
630 DATA 255, 255, 100, 32, 112, 238, 36, 1, 194, 252
640 DATA 0, 40, 210, 174, 0, 48, 170, 174, 0, 52
650 DATA 99, 14, 74, 102, 34, 0, 107, 8, 32, 111
660 DATA 24, 0, 34, 2, 66, 128, 76, 226, 4, 92
670 DATA 78, 117, 72, 231, 122, 226, 32, 120, 1, 24
680 DATA 79, 146, 102, 36, 112, 241, 80, 67, 102, 14
690 DATA 32, 110, 152, 0, 88, 127, 97, 8, 0, 104
700 DATA 97, 0, 0, 0, 76, 223, 71, 94, 78, 117
710 DATA 72, 231, 12, 240, 32, 0, 0, 128, 0, 0
720 DATA 32, 64, 145, 252, 0, 0, 0, 16, 34, 110
730 DATA 0, 4, 179, 200, 108, 54, 16, 128, 0, 12
740 DATA 181, 200, 111, 46, 181, 208, 103, 42, 179, 200
750 DATA 103, 6, 110, 36, 211, 205, 98, 242, 67, 238
760 DATA 0, 4, 74, 169, 0, 4, 103, 18, 211, 233
770 DATA 0, 4, 179, 200, 102, 242, 96, 12, 209, 252
780 DATA 0, 0, 0, 16, 112, 25, 78, 65, 96, 6
790 DATA 112, 232, 97, 0, 254, 152, 36, 222, 15, 14
800 DATA 74, 17, 72, 231, 96, 128, 97, 0, 0, 10
810 DATA 44, 72, 76, 223, 1, 6, 78, 117, 47, 0
820 DATA 112, 0, 78, 68, 32, 31, 78, 117, 72, 231
830 DATA 114, 100, 52, 128, 1, 24, 78, 146, 102, 44
840 DATA 112, 241, 12, 67, 0, 2, 102, 36, 34, 54
850 DATA 153, 0, 88, 137, 36, 54, 152, 0, 88, 137
860 DATA 97, 0, 0, 28, 102, 18, 69, 137, 45, 136
870 DATA 152, 0, 97, 9, 0, 32, 102, 6, 45, 73
880 DATA 0, 88, 128, 2, 36, 220, 5, 78, 78, 117
890 DATA 72, 231, 48, 112, 112, 24, 78, 65, 74, 128
900 DATA 76, 220, 14, 12, 78, 117, 47, 10, 47, 54
910 DATA 152, 0, 98, 137, 72, 231, 240, 0, 45, 73
920 DATA 0, 80, 114, 18, 58, 128, 1, 36, 78, 146
930 DATA 34, 110, 0, 89, 26, 223, 0, 15, 52, 120
940 DATA 1, 38, 85, 73, 61, 151, 152, 9, 112, 0
950 DATA 78, 146, 74, 128, 103, 10, 223, 252, 0, 6
960 DATA 0, 4, 96, 0, 0, 120, 48, 31, 186, 32
970 DATA 93, 137, 61, 108, 0, 15, 152, 0, 45, 188
980 DATA 16, 0, 0, 0, 52, 2, 112, 18, 78, 146
990 DATA 74, 128, 103, 0, 225, 252, 0, 0, 0, 2
1000 DATA 96, 88, 93, 137, 61, 108, 0, 15, 152, 0
1010 DATA 45, 188, 16, 0, 0, 0, 152, 2, 112, 14
1020 DATA 78, 146, 74, 128, 103, 0, 223, 252, 0, 0
1030 DATA 0, 2, 96, 56, 69, 72, 67, 151, 152, 6
1040 DATA 112, 6, 78, 146, 74, 128, 103, 0, 223, 252
1050 DATA 0, 0, 0, 2, 96, 94, 45, 33, 108, 24
1060 DATA 93, 137, 61, 108, 0, 19, 152, 0, 45, 188
1070 DATA 16, 0, 0, 0, 152, 2, 112, 10, 78, 146
1080 DATA 74, 128, 102, 6, 112, 19, 78, 146, 74, 128
1090 DATA 36, 95, 78, 112, 72, 231, 64, 2, 114, 1
1100 DATA 97, 0, 253, 250, 102, 24, 112, 241, 187, 209
1110 DATA 102, 0, 97, 0, 254, 200, 97, 0, 0, 0
1120 DATA 76, 223, 64, 2, 78, 117, 72, 231, 64, 64
1130 DATA 97, 0, 0, 58, 103, 48, 112, 241, 12, 180
1140 DATA 0, 0, 12, 170, 0, 4, 102, 36, 78, 64
1150 DATA 34, 41, 0, 90, 35, 105, 0, 62, 0, 50
1160 DATA 35, 65, 0, 62, 10, 41, 0, 69, 19, 105
1170 DATA 0, 78, 0, 69, 19, 65, 0, 78, 2, 134
1180 DATA 222, 230, 66, 170, 76, 223, 2, 2, 78, 117
1190 DATA 72, 231, 96, 0, 112, 256, 34, 0, 107, 30
1200 DATA 170, 128, 0, 114, 118, 22, 34, 118, 0, 128
1210 DATA 116, 4, 196, 193, 211, 194, 34, 81, 72, 65
1220 DATA 170, 105, 0, 15, 102, 2, 66, 128, 76, 223
1230 DATA 0, 6, 78, 117, 112, 241, 182, 208, 102, 6
1240 DATA 97, 0, 0, 5, 66, 128, 78, 117, 0, 249
1250 DATA 0, 1, 0, 1, 120, 99, 78, 117, 47, 14
1260 DATA 112, 241, 187, 200, 102, 18, 97, 0, 254, 46
1270 DATA 97, 0, 0, 0, 60, 128, 44, 95, 78, 117
1280 DATA 19, 220, 0, 98, 0, 1, 130, 99, 78, 117
1290 DATA 0, 0
```

Programming: BBC

Labelling routine provides flexibility

Many's the time you need half a dozen self addressed envelopes if you are writing away for details of advertised products. Or perhaps you have brewed an enormous batch of bottled beer and need to label it with a date and batch number. Whatever your labelling needs the following simple flexible routine should be of use to those of you with an Epson compatible printer.

The program is written to allow 7 lines of text of 36 characters to each line, which fits comfortably on to readily available self adhesive 4 × 1.5 inch tractor fed labels.

You can print individual labels or as many as you like.

```
10REM**E.R.Page**
20REM**Label printer**
40MODE7
50VDU23;11,0;0;0;0;
60*FX229,1
70PROCtitle
80CLS:PROCinstruc
90END
100DEFPROClabel
110VDU23;11,255;0;0;0;
120CLS:PRINTTAB(3,10)"How many of each label do you want";N:IF N<1 THEN 120
130CLS:PRINTTAB(3,20)"Maximum 36 characters per line"
140PRINTTAB(3,22)"Press RETURN after each line"
150PRINTTAB(3,23)"or to enter blank lines."
160VDU23;11,255;0;0;0;
170PRINTTAB(3,6)"Type in your label"
180PRINT''
190INPUTLINE A$,B$,C$,D$,E$,F$,G$
200VDU23;11,0;0;0;0;
210PRINTTAB(3,20)"
220PRINTTAB(3,22)"Is this what you want? Y/N "
230PRINTTAB(3,23)"
240 ON INSTR("YyNn",GET$)GOTO240,250,250,130,130 ELSE240
250PROCprint
260ENDPROC
265:
270DEFPROCprint
280*FX6 0
290VDU2,1,27,1,64,1,27,1,48
300FOR x=1 TO N
310PRINT LEFT$(A$,36)
320PRINT LEFT$(B$,36)
330PRINT LEFT$(C$,36)
340PRINT LEFT$(D$,36)
350PRINT LEFT$(E$,36)
360PRINT LEFT$(F$,36)
370PRINT LEFT$(G$,36)
380PRINT :NEXT
390VDU3
400PROClabel
410ENDPROC
415:
420DEFPROCinstruc
430CLS:PRINTTAB(0,4)"This program allows you to print labels with up to 7 lines of text e.g."
440PRINT ''
450PRINTTAB(8,8)"Mr. A.B Bloggs,"
460PRINTTAB(8,9)"127,White Street "
470PRINTTAB(8,10)"OLDTOWN"
480PRINTTAB(8,11)"RT9 8TY"
490PRINTTAB(8,12)"ENGLAND"
500PRINTTAB(8,13)"EUROPE"
510PRINTTAB(8,14)"THE WORLD"
520PRINTTAB(0,17)"It is ideally suited for 4 by 1½ inch   pin feed labels,which are readily      available."
530PRINTTAB(5,22)"Press SPACE to continue."
540IF GET$=" "THEN PROClabel ELSE 540
550ENDPROC
555:
560DEFPROCtitle
570PRINTTAB(15,8)CHR$141"Label"
580PRINTTAB(15,9)CHR$141"Label"
590PRINTTAB(14,11)CHR$141"Printer"
600PRINTTAB(14,12)CHR$141"Printer"
610PRINTTAB(15,13)"********"
620A=INKEY(300)
630ENDPROC
```

Versatility and smoothness in scrolling

While programs to scroll messages smoothly aren't exactly new the eight machine code routines presented here are fairly versatile in that they are relocatable and allow scrolling on any Basic screen line (0 to 23)

All characters with codes between 32 and 164 (the character set, block graphics and UDG's) may be scrolled; those outside this range are simply skipped over. The message will be repeated once the carriage return (Chr$ 13) delimiter is found thereby giving an endless loop scroll

A return from these routines is effected by pressing the Space/Break keys. Both the character set and the UDG's are accessed through their system variables, so either can be altered

Four different fonts are provided each with two speeds by stretching the characters in vertical and horizontal planes For example "2×1 FAST" will produce a fast scroll with characters twice as high as normal. Any manipulation of the characters is carried out in the first 16 or 32 bytes of the printer buffer. Also, due t the critical timing, some scrollers will not work properly within the bottom 16K of Ram – indeed it is best to put all machine code routines above 32767

The location and position of the message on screen are accessed through the unused system variables 23681 (for the screen line number) and 23728 23729 (holding the origin of the message low order byte first). However, a message finder has been included to detect the origin automatically and to set these variables

All the routines are error trapped: a line number greater than 23 (on tall scrollers 22) will produce the message out of screen whilst the message finder reports statement lost if no Basic line starts with Rem$

If, later in the program, you want to scroll another message, you can change the search to say Rem# by poking the start address (plus 27) of the searcher with 35 (the code of #) and then recall it.

Many readers will know that if the high order byte of a line number is greater than 63 then that line will not be listed. Run the demonstration program and Break into it. Then enter print Usr 63000 as a direct command. The number returned is the origin of the message in memory; let's say it is 24700. By poking (24700-6),255 the message will have disappeared; you can retrieve the line by poking back the original number (ie, 0)

This provides a way of preventing tampering with your message, but do not put any Basic program lines after the message or they will be neither listed or executed



```
10 REM HEX LOADER
20 CLEAR 32767: POKE 23658,8: REM UPPER CASE
30 DEF FN X(N)=CODE A$(N)-48-(7 AND CODE A$(N)>64)
40 READ S: READ L: READ T$: LET E=L+S-1: LET G=210
50 FOR I=S TO E STEP 8
60 LET CS=0: READ A$: IF LEN A$<>16 THEN PRINT "LINE LENGTH ERROR! : STOP
70 FOR K=0 TO 7
80 LET V=16*FN X(1)+FN X(2)
90 POKE I+K,V: LET CS=CS+V
100 LET A$=A$(3 TO ): NEXT K
110 READ D: IF D<>CS THEN PRINT "DATA ERROR IN LINE ";G: STOP
120 LET G=G+10: NEXT I
130 SAVE T$CODE S,L
140 VERIFY T$CODE

200 DATA 32768,198,"2*1 SLOW"
210 DATA "3A615C3CFE1AD28E",961
220 DATA "0C4FFE053E013002",463
230 DATA "C608329C5C79E618",879
240 DATA "C6476779E6070F0F",760
250 DATA "0FC61F6F229A5C2A",677
260 DATA "B05CE57EFE203A3A",1023
270 DATA "FEA53036FE203E16",981
280 DATA "FE9030072A78ECD6",932
290 DATA "90100E4721925CE5",753
300 DATA "CD3B0BE1180B2A36",631
310 DATA "5CEB2B006F292929",599
320 DATA "1911005806087E12",291
330 DATA "1312132310F81FEB",617
340 DATA "1806184218BC1387",548
350 DATA "060FC5E51E020608",486
360 DATA "CD16172B10FA091D",594
370 DATA "20F4ED5B9A5C76F5",1213
380 DATA "3A9C5C0410FS3D[illegible]",673
390 DATA "FBF1E62C50E08A62",817
400 DATA "6B170620CB162B10",452
410 DATA "FB150D20F27BE620",928
420 DATA "5F3F4FE6202025700",780
430 DATA "C110E1E1C1[illegible]8B3E",1117
440 DATA "7FD8FE1FE1D0287E",1225
450 DATA "FE0D20A81BA0000C",659

100 DATA 32768,201,"2*1 FAST"
210 DATA "3A615CFE17D2860C",912
220 DATA "4FFE0A3E013002C6",654
230 DATA "0A329C5C79E61806",881
240 DATA "406779E6070F0F0F",570
250 DATA "C61F6F229A5C2A80",630
260 DATA "5CE57EFE203836FE",1099
270 DATA "A53034FEB03E16FE",973
280 DATA "9030072A785CD690",922
290 DATA "10E4721925CE5CD",814
300 DATA "[illegible]BE1B0BEA365C",51[illegible]
310 DATA "EDE60J6F29292919",932
320 DATA "110058060087E113",285
330 DATA "12132310F8180E18",390
340 DATA "511[illegible]BC0604ED",751
350 DATA "5B9A5C21005B7EC5",776
360 DATA "0601[illegible]10FE3D",644
370 DATA "20FBC1[illegible]02C5[illegible]",703
380 DATA "CB1617[illegible]CB1[illegible]17[illegible]",539
390 DATA "10F6E50E0962EB17",741
400 DATA "0817062[illegible]CB[illegible]",310
410 DATA "CB1[illegible]2B1[illegible]F7140[illegible]20",596
420 DATA "EC7BC6[illegible]5F[illegible]FE6",1136
430 DATA "F88257E1C1[illegible]D20CD",1133
440 DATA "10B53E7FD0FE1FE1",1115
450 DATA "D0237EFE0D20A41[illegible]",856
460 DATA "A000000000000000",160

200 DATA 32768,241,"2*2 SLOW"
210 DATA "3A615CFE17D[illegible]0C",912
220 DATA "4FFE093E013002C6",653
230 DATA "08329C5C79EE18C6",879
240 DATA "406779E6070F0F0F",570
250 DATA "C61F6F22[illegible]A5C2A80",839
260 DATA "5CE57EFE[illegible]0365AFE",1129
270 DATA "A5[illegible]052FE[illegible]03616FE",1107
280 DATA "9030[illegible]7E5CD690",822
290 DATA "10E47219[illegible]5CE5CD",814
300 DATA "3B0BE1[illegible]EC2A265C",503
310 DATA "EB[illegible]600FF2[illegible]92919",532
320 DATA "EB2[illegible]5B060[illegible]C5[illegible]",783
330 DATA "1A4F1E[illegible]604CB11",367
340 DATA "9F17CB[illegible]17CB1620",671
350 DATA "F57E[illegible]37[illegible]B7DE510",947
360 DATA "6F1D20E[illegible]3D101",876
370 DATA "13[illegible]0D[illegible]3CB10",423
380 DATA "9D109E2[illegible]",471
390 DATA "[illegible]4E[illegible]58[illegible]A5[illegible]C5",1010
400 DATA "76C5C6013A9[illegible]5C10",644
410 DATA "FE3D20[illegible]E02[illegible]",1004
420 DATA "0602CB1617[illegible]0CB16",4[illegible]
430 DATA "17231[illegible]F6[illegible]E0[illegible]62",669
440 DATA "6B1708[illegible]L0[illegible]CB",41[illegible]
450 DATA "1[illegible]0ACB1[illegible]2B1[illegible]F714",5[illegible]
460 DATA "0D20EC7BC6[illegible]5F[illegible]",79[illegible]
470 DATA "[illegible]FE6F68[illegible]C7E1[illegible]",1205
480 DATA "[illegible]CDE110BEC12E1[illegible]",915
490 DATA "10AE3[illegible]7[illegible]DB[illegible]E1FE1",1108
500 DATA "D0[illegible]37[illegible]FE0D20[illegible]",84[illegible]
510 DATA "[illegible]60000[illegible]",1[illegible]0

200 DATA 327[illegible] "[illegible] FAST"
210 DATA "3A[illegible]CFE1[illegible]",[illegible]
220 DATA "0CAFFE[illegible]63E0[illegible]30[illegible]2",[illegible]64
230 DATA "C608329[illegible]5C74E[illegible]",[illegible]
240 DATA "C647[illegible]779E6070F0F",7[illegible]1
250 DATA "0FC61F6F229A5C2A",[illegible]
260 DATA "B05CE57EFE[illegible]",1[illegible]1
270 DATA "FEA53052FE[illegible]",[illegible]
280 DATA "FE9038072A7B[illegible]",[illegible]
290 DATA "[illegible]120E472[illegible]",[illegible]
300 DATA "CD3B0BD1180C2A3[illegible]",[illegible]
310 DATA "5CEB260[illegible]",[illegible]79
320 DATA "19EB210F580A[illegible]",[illegible]0
330 DATA "D51A4F1E[illegible]CB",[illegible]
340 DATA "119F172[illegible]B1617CB",672
350 DATA "10F57E2[illegible]7DEC",947
360 DATA "1[illegible]6F1[illegible]",7[illegible]
370 DATA "C1131D[illegible]",[illegible]75
380 DATA "1BA[illegible]",332
390 DATA "5BC50E[illegible]D602D[illegible]2A",567
400 DATA "9A5C76[illegible]53A[illegible]",[illegible]
410 DATA "FE3D20F5C[illegible]",1010
420 DATA "EBED6FE5[illegible]",1055
430 DATA "ED6F[illegible]EB[illegible]",4[illegible]
440 DATA "D1132BEC7DE62[illegible]",972
450 DATA "3F9FE6[illegible]C0467[illegible]",[illegible]
460 DATA "DCD1[illegible]D[illegible]",912
470 DATA "10BF3E7FD8FE1FE[illegible]",1125
480 DATA "D0237EFE0D20A41[illegible]",861
490 DATA "A900000000000000",159
```

The menu and the monitor

The monitor is menu driven and offers a Hex/Ascii dump to screen or printer, edit Ram Hex-Binary-Decimal (16 bit) conversion, fill Ram with constant, block move, search for one to six byte string of hex, save, load, execute from address and is about 3k long Once the program has been successfully entered and saved it should be called via a *Sys 49152* command

The edit/examine option displays 24 lines of text, each line showing eight bytes the hexadecimal contents and the Ascii equivalents thereof Non printable characters are represented as full stops The cursor keys are used to move around the screen the display being scrolled in the appropriate direction when the top or bottom of the screen is reached Pressing 'P will dump the screen contents to the printer Pressing Q' returns you to the main menu

The search for string option requires the entry of between one and six hexadecimal values (spaces are optional, but do not exceed 20 characters) which the program will then search for throughout the memory, printing occurences on the screen.

F8 (shifted f7) prompts for a start address of the code you wish to execute If the code does not overwrite the monitor, and exits via an *Rts* correctly you will return to the monitor menu on exit.

```
100 REM ************************
110 REM *                      *
120 REM * COMMODORE 64 MONITOR *
130 REM *                      *
140 REM ************************
150 :
160 DIM COUNT(118),CHECK(118)
170 PRINT"3#        ENTERING DATA..."
180 REM SHIFT+CLR/HOME,WHITE,8 SPACES
190 FOR A=1 TO 118:READ CHECK(A):NEXT A
200 LINE=470:SUM=0:COUNT(118)=0:NUMBER=1
210 FOR A=49152 TO 52426 STEP 28
220 C= A+27:IF C> 52426 THEN C =52426
230 FOR B= A TO C :PRINT"#";B:READ X:POKE B,X
240 SUM =SUM+X:NEXT B
250 COUNT (NUMBER) = SUM: COUNT (118)= COUNT (118)+SUM
260 IF COUNT (NUMBER) <> CHECK (NUMBER) THEN GOTO320
270 SUM =0:NUMBER=NUMBER+1
280 LINE = LINE+20
290 NEXT A
300 IF COUNT (118) <> CHECK (118) THEN GOTO320
310 PRINT"DATA CORRECT : SYS 49152 TO ACTIVATE":STOP
320 PRINT"ERROR IN DATA - CHECK LINES"
330 PRINTLINE;" AND ";LINE+10
340 STOP
350 DATA  1284 , 1679 , 1804 , 1861 , 1946 , 1967 , 1866 , 1998 , 1869 , 723
360 DATA  1851 , 1808 , 1776 , 1803 , 1830 , 1880 , 3312 , 3215 , 3579 , 3618
370 DATA  2955 , 3635 , 2696 , 3511 , 3855 , 3693 , 3246 , 3926 , 4006 , 3718
380 DATA  3343 , 3558 , 3455 , 3185 , 3693 , 3303 , 3978 , 3522 , 4199 , 4001
390 DATA  3613 , 3381 , 4167 , 3269 , 4147 , 3328 , 3963 , 3445 , 3557 , 4100
400 DATA  3383 , 3638 , 3605 , 4094 , 3336 , 3325 , 3580 , 3382 , 4568 , 3915
410 DATA  4046 , 3746 , 3789 , 3398 , 3357 , 3891 , 3465 , 4202 , 3604 , 3939
420 DATA  3616 , 3996 , 4259 , 3843 , 3704 , 3616 , 3382 , 3670 , 3017 , 3102
430 DATA  3801 , 3228 , 3732 , 3541 , 3817 , 3874 , 4269 , 2674 , 2999 , 4659
440 DATA  4268 , 4559 , 4155 , 3735 , 3833 , 4028 , 3669 , 3855 , 4062 , 4815
450 DATA  4049 , 4140 , 3730 , 4459 , 3566 , 4402 , 4841 , 4362 , 4173 , 3878
460 DATA  3524 , 3578 , 3340 , 2895 , 3637 , 3504 , 3724 , 403960
470 DATA  76,  9,204, 48, 49, 49, 48, 48, 48, 48, 48, 48, 48, 48
480 DATA  48, 48, 48, 48, 48,  6,  0,  0,  0, 52, 56, 53, 56,  2
490 DATA   4,  5,  7,  6, 50, 52, 53, 55, 54,  0, 76,198,140,  5
500 DATA   0, 88, 72, 81, 83, 84, 65, 82, 84, 32, 65, 68, 68, 82
510 DATA  69, 83, 83, 63, 32, 36, 64, 69, 78, 68, 32, 65, 68, 68
520 DATA  82, 69, 83, 83, 63, 32, 36, 64, 69, 78, 84, 69, 82, 32
530 DATA  84, 65, 82, 71, 69, 84, 32, 83, 84, 82, 73, 78, 71, 32
540 DATA  73, 78, 32, 72, 69, 88, 45, 77, 65, 88, 32, 54, 32, 66
550 DATA  89, 84, 69, 83, 32, 64, 84, 65, 82, 71, 69, 84, 32, 70
560 DATA  79, 85, 78, 68, 32, 65, 84, 32, 58, 64, 91, 66, 93, 73
570 DATA  78, 32, 91, 68, 93, 69, 67, 32, 79, 82, 32, 91, 72, 93
580 DATA  69, 88, 63, 64, 70, 73, 76, 69, 78, 65, 77, 69, 63, 64
590 DATA  68, 69, 86, 73, 67, 69, 32, 78, 85, 77, 66, 69, 82, 63
600 DATA  32, 91, 84, 65, 80, 69, 45, 49, 44, 68, 73, 83, 67, 32
610 DATA  45, 56, 32, 85, 83, 85, 65, 76, 76, 89, 93, 64, 68, 69
620 DATA  83, 84, 73, 78, 65, 84, 73, 79, 78, 32, 65, 68, 68, 82
630 DATA  69, 83, 83, 63, 64, 72, 69, 88, 32, 86, 65, 76, 85, 69
640 DATA  32, 70, 79, 82, 32, 70, 73, 76, 76, 63, 64, 36,  0,112
```

```
650 DATA  32,113, 23,  0,159,  7,184,  7, 54, 48, 48, 48,  0,  0
660 DATA   0,  0,  0,  0,  0,  0,  0,  0,  0,  0,  0,  0,  0,  0
670 DATA  64, 64, 75, 69, 89, 32, 67, 79, 77, 77, 65, 78, 68, 64
680 DATA  64, 32, 67, 45, 32, 67, 79, 78, 86, 69, 82, 84, 32, 66
690 DATA  73, 78, 47, 72, 69, 88, 47, 68, 69, 67, 64, 32, 69, 45
700 DATA  32, 69, 88, 65, 77, 73, 78, 69, 43, 69, 68, 73, 84, 32
710 DATA  77, 69, 77, 79, 82, 89, 64, 32, 83, 45, 32, 83, 65, 86
720 DATA  69, 64, 32, 76, 45, 32, 76, 79, 65, 68, 64, 32, 66, 45
730 DATA  32, 66, 76, 79, 67, 75, 32, 77, 79, 86, 69, 64, 32, 84
740 DATA  45, 32, 70, 73, 78, 68, 32, 84, 65, 82, 71, 69, 84, 32
750 DATA  66, 89, 84, 69, 83, 64, 32, 70, 45, 32, 70, 73, 76, 76
760 DATA  32, 82, 65, 77, 64, 70, 56, 45, 32, 69, 88, 69, 67, 85
770 DATA  84, 69, 32, 70, 82, 79, 77, 32, 65, 68, 68, 82, 69, 83
780 DATA  83, 64, 32, 81, 45, 32, 81, 85, 73, 84, 64, 36,160,  0
790 DATA 162,  0,185, 23,192, 56,233, 48,201, 10,144,  3, 56,233
800 DATA   7,153, 19,192,200,192,  4,208,235,160,  0,185, 19,192
810 DATA  10, 10, 10, 10,157, 42,192,200,185, 19,192, 41, 15, 24
820 DATA 125, 42,192,157, 42,192,200,232,224,  2,208,227, 96,169
830 DATA 147, 32,210,255, 96,162,  0,169, 48,157,  3,192, 14, 42
840 DATA 192,144,  3,254,  3,192,232,224,  8,208,240,157,  3,192
850 DATA  14, 43,192,144,  3,254,  3,192,232,224, 16,208,240, 96
860 DATA 162,  0,142, 42,192,142, 43,192,189,  3,192,201, 49,208
870 DATA   4, 56, 76, 54,194, 24, 46, 42,192,232,224,  8,208,236
880 DATA 189,  3,192,201, 49,208,  4, 56, 76, 74,194, 24, 46, 43
890 DATA 192,232,224, 16,208,236, 32, 86,194, 96,173, 42,192,141
900 DATA  44,192,173, 43,192,141, 45,192,160,  0,162,  0,185, 42
910 DATA 192, 74, 74, 74, 74, 24,105, 48,201, 58,144,  2,105,  6
920 DATA 157, 23,192,232,185, 42,192, 41, 15, 24,105, 48,201, 58
930 DATA 144,  2,105,  6,157, 23,192,232,200,192,  2,208,213, 96
940 DATA 173, 42,192,141, 44,192,173, 43,192,141, 45,192,169,  0
950 DATA 170,157, 27,192,232,224,  5,208,248,173, 44,192,201, 40
960 DATA 144, 26,238, 27,192, 56,233, 39,141, 44,192,173, 45,192
970 DATA  56,233, 16,141, 45,192,176,229,206, 44,192, 76,169,194
980 DATA 201, 39,208, 27,173, 45,192,201, 17,144, 20,238, 27,192
990 DATA 169,  0,141, 44,192,173, 45,192, 56,233, 16,141, 45,192
1000 DATA  76, 38,195,173, 44,192,201,  4,144, 26,238, 28,192, 56
1010 DATA 233,  3,141, 44,192,173, 45,192, 56,233,232,141, 45,192
1020 DATA 176,229,206, 44,192, 76,233,194,201,  3,208, 24,173, 45
1030 DATA 192,201,232,144, 17,238, 28,192,169,  0,141, 44,192,173
1040 DATA  45,192, 56,233,232,141, 45,192,173, 44,192,240, 20,238
1050 DATA  29,192,173, 45,192, 56,233,100,141, 45,192,176,237,206
1060 DATA  44,192, 76, 38,195,173, 45,192,201,100,144, 12, 56,233
1070 DATA 100,141, 45,192,238, 29,192, 76, 63,195,173, 45,192,201
1080 DATA  10,144, 12, 56,233, 10,141, 45,192,238, 30,192, 76, 82
1090 DATA 195,141, 31,192,162,  0,189, 27,192, 24,105, 48,157, 32
1100 DATA 192,232,224,  5,208,242, 96,162,  0,189, 32,192, 56,233
1110 DATA  48,157, 27,192,201, 10,144,  6, 56,233,  7,157, 27,192
1120 DATA 232,224,  5,208,232,169,  0,141, 44,192,141, 45,192,173
1130 DATA  27,192,240, 29,206, 27,192,173, 45,192, 24,105, 16,141
1140 DATA  45,192,144,  3,238, 44,192,173, 44,192, 24,105, 39,141
1150 DATA  44,192, 76,155,195,173, 28,192,240, 29,206, 28,192,173
1160 DATA  45,192, 24,105,232,141, 45,192,144,  3,238, 44,192,173
1170 DATA  44,192, 24,105,  3,141, 44,192, 76,189,195,173, 29,192
1180 DATA 240, 20,206, 29,192,173, 45,192, 24,105,100,141, 45,192
1190 DATA 144,237,238, 44,192, 76,223,195,173, 30,192,240, 20,206
1200 DATA  30,192,173, 45,192, 24,105, 10,141, 45,192,144,237,238
1210 DATA  44,192, 76,248,195,173, 31,192, 24,109, 45,192,141, 45
1220 DATA 192,144,  3,238, 44,192,173, 44,192,141, 42,192,173, 45
1230 DATA 192,141, 43,192, 96,169,  0,170,168,157, 32,192,153, 27
1240 DATA 192,232,200,224,  5,208,244,170,168,157, 19,192,232,224
1250 DATA   4,208,248,153,  3,192,200,192, 16,208,248,160,  0,153
1260 DATA   4,193,200,192, 20,208,248, 96,160,  0, 32,207,255,201
1270 DATA  13,240, 23,201, 20,208,  8,192,  0,240,241,136, 76, 92
1280 DATA 196,192, 20,240,233,153,  4,193,200, 76, 92,196, 96, 32
1290 DATA  45,196, 32, 90,196,169, 48,162,  0,157, 32,192,232,224
1300 DATA   5,208,248,162,  4,160,  4,189,  4,193,240,  4,153, 32
1310 DATA 192,136,202,224,255,208,242, 32,121,195, 32,253,193,173
1320 DATA  44,192,141, 42,192,173, 45,192,141, 43,192, 32, 86,194
1330 DATA  96, 32, 45,196, 32, 90,196,169, 48,162,  0,157, 23,192
1340 DATA 232,224,  4,208,248,162,  3,160,  3,189,  4,193,201,  0
1350 DATA 240,  4,153, 23,192,136,202,224,255,208,240, 32,190,193
1360 DATA 173, 42,192,141. 44,192,173, 43,192,141, 45,192, 32,253
```

Decimal to Hex – QL
by Michael Chapman

Frustrated and confused by trying to work out hexadecimal numbers from decimals? Of course you are But salvation is at hand with this small program which turns decimals inputted into the corresponding hexadecimal values

```
140 MODE 4:PAPER 0:INK 7:CLS
150 OPEN #3,scr_512x40a0x0
160 WINDOW 512,216,0,40
170 INK #3,2:PAPER #3 1:CLS #3
180 ww=0
190 FOR wa=7 TO 0 STEP -1
200 BORDER #3,wa,ww
210 ww=ww+1:END FOR wa
```

```
220 CSIZE 2,1:AT #3,1,14:PRINT #3,"HEX
    NUMBER'S"
230 AT #3,2,9:PRINT #3,'By K.M & M.K
    Chapman'
240 CSIZE 3,1
250 INPUT #1,a$:x=0
260 FOR C=1 TO LEN(a$)
270 IF CODE (a$(C))<48 THEN x=1
280 IF CODE (a$(C))>57 THEN x=1
290 END FOR C
300 IF x=1 THEN PRINT "DECIMAL NUMBERS
    ONLY":GO TO 250
340 PRINT B$
350 GO TO 250
360 DEFine PROcedure THEX
370 IF E$<10 THEN END DEFine
380 E$=65+E$(2):E$=CHR$(E$)
390 END DEFine
400 DEFine PROcedure check
410 IF a$="" THEN RUN 100
420 W=256:I=2
430 REPeat LOOP
440 b=INT(a$/W)
450 IF b=0 THEN EXIT LOOP
460 I=I+1:W=W*16
470 END REPeat LOOP
480 FOR t=1 TO I-1
490 C=INT(a$/W):E$=C:THEX:B$=B$&E$
500 a$=a$-(C*W):W=W/16
510 END FOR t
520 END DEFine check
```

Scrolling Window
by S W Booth

As scrolling a window on the QL loses all the data in that window I have written the following routine which allows any number of lines to be scrolled up to the top of the screen and then placed at the bottom again For example Call start 100 50 will scroll the top 100 lines in a rotary fashion 50 times

When the program has been run the code can be saved with *Sbytes mdv1_slide, bytes start 56*

To load the code use *start= Respr(56) Lbytes mdv1_slide, bytes* start and then *Call* it whenever you like

```
100 OPEN #3,scr_512x256a0x0
110 MODE 4:LIST #3:start=RESPR(56)
140 FOR i=0 TO 55:READ a:POKE i+start.a:NEXT i
160 CALL start,80.240
170 DATA 38,1,199.252,0,128,32,124.0,2,0,0,34,72,211.195
180 DATA 112,31,34,216,81,200,255.252,32.1,193.252,0,32
190 DATA 32,124.0,2.0,0,34,124.0,2.0.128,32.217.81
200 DATA 200,255.252,81,202,255,212,112,0,78.117
```

Memo
by Pete White

This is a short utility program which provides a memo or diary function On running the program a menu is displayed offering the opportunity to enter, load or save information or search for a file referred by date After selecting enter and typing in your memo press *Enter* to finish You will then be faced with a query for anew date, pressing *Enter* again returns you to the menu

```
20 [illegible]
30 DIM memo$(200[illegible]):DIM date$(200)
40 [illegible]PRINT"**********************MEMO
   by Pete White**********************":PRINT
50 PRINT" 1.. Enter information":PRINT "
   2.. Load information":PRINT"3.. Save 1
   nformation"
60 INPUT"4 .. Search for data
        ";ansa
70 ON ansa GOTO 90,170 230,300
80 GOTO 40
90 FOR x=1 TO 200:INPUT "Enter data...
             ";date$(x)
100 IF LEN(date$(x))[illegible] THEN 120
110 IF date$(x)=""THEN 40
120 MODE 2
130 PRINT date$(x) PRINT:PRINT:INPUT">"
    date$(x)
140 NEXT x
150 GOTO 40
160 DISC
170 OPENIN "data"
180 FOR x=1 TO 100
190 INPUT #9 date$(x) memo$(x)
200 NEXT x
210 CLOSEIN
220 GOTO 40
230 DISC
240 OPENOUT "data"
250 FOR x=1 TO 100
260 WRITE #9 date$(x) memo$(x)
270 NEXT x
280 CLOSEOUT
290 GOTO 40
300 serd$="":PRINT:INPUT"Enter data...
              ";serd$
310 xz=0
320 FOR xz=1 TO 200
330 IF serd$=date$(xz) THEN GOTO 360
340 NEXT xz
350 GOTO 370
360 PRINT:PRINT date$(xz):PRINT:PRINT me
    mo$(xz)
370 LOCATE 1,25:PRINT"Press a key ."
380 WHILE INKEY$<>"":WEND:WHILE INKEY$=""
    :WEND:GOTO 40
```

We want your programs!!

Yup, this is your chance to get rich and famous Well famous anyway, as *Popular Computing Weekly* is looking for contributions to the Programming pages

What sort of thing are we looking for? You name it – anything original from games to utilities, applications and the like, written in Basic machine code or anything else you can think of

Programs for any computer will be considered, not just old faithfuls (Spectrum, Amstrad, QL, Commodore etc), so send those listings in What we need is a working copy of the program on tape or disc, plus an accompanying article or documentation that you would anticipate going with the piece, normally not over 2000 words

Alternatively, send in your short programs in to the Bytes and Pieces page – what could be easier?

In return, we'll pay the princely sum of £25 per page for the main programming pages and £5 for each Bytes & Pieces contribution we publish Plus the fact that your name will be indelibly carved in the *Popular* programming hall of Fame till time immemorial What more could any true programmer ask for?

Just send your masterpieces in to Duncan Evans, Technical Editor *Popular Computing Weekly*, 12-13 Little Newport St, London WC2 7PP and he'll assess them post haste



with Kenn Garroch

Jargon explained

Jason McMullen of South Shields, Tyne & Wear writes

Q I am thinking of buying a modem for my Commodore 64 and have read some magazine articles on the subject. The thing is, I don't understand the technical jargon like parity and baud rates, etc. Please will you explain it to me. Could you also give me some idea of how much it costs on the phone?

A The main pieces of technical jargon used in comms (communications) are RS232, Baud Rate Parity Stop and Start bits V21, V25, Word length, Full/Half duplex

RS232 V21 and V25 are all standards used in communications The first is a standard for serial (one bit at a time) connections between one device and another and consists of up to 25 wires (many of which are not used) The major ones are:

TX – transmit data pin 2 (output)
RX – Receive data pin 3 (input)
RTS – Ready to send pin 4 (output)
CTS – Clear to send pin 5 (input)
Ground – Signal ground pin 7

For most modems and communications systems this is all that is needed The RS232 specification also states that a 25-way connector can be used at either end of the cable and that the voltages vary between + and − 12 volts in practice, many manufacturers don't use these connectors or voltages but still call their interface RS232

V21 is 300/300 baud transmit/receive. V23 is 1200/75 V22 1200/1200 These are the standards for speeds Most bulletin boards are 300/300 though some use the same as Prestel which is 1200/75

Baud rate means bits per second and specifies the speed at which information is transmitted and received

Parity is used for error checking and can be either even, odd, or none ie no parity bit. Most systems use none but since you asked the parity is worked out by adding together all the bits in the transmitted word. If the result is even then the parity is even, and the parity bit is set to zero If odd, the parity bit is set to one and transmitted following the rest of the bits in the word The error checking comes in when the receiving system checks the parity bit against the parity it works out from what it receives If this is wrong then an error occurred during transmission

Stop and start bits are placed either side of data bits For instance, if the line to the computer is low the start bit would take it high telling the receiver that some data is coming The stop bits perform the reverse and leave the line in its original state The number of start and stop bits is usually one though some systems may use two stop bits

Word length is the number of bits used to carry the data The ASCII character set used by most computers has 256 characters including control codes (clear the screen, carriage return Bell etc) For this eight data bits are needed so most systems these days use a word length of eight bits Again, occasionally some systems will use seven giving only 128 characters of five (32 characters) Since there are 26 letters in the alphabet, five bits is all that is really needed if just capitals are to be used

Duplex is a word used to describe whether both the send and receive systems can talk and listen at once (Full duplex) or only one at a time (Half duplex) Which is used depends mainly on the medium and method being used for transmission A British telephone line is easily capable of 300/300 full duplex but more than 1200/1200 causes problems Some modems will allow 4800 or even 9600 baud half duplex but they are expensive due to the special circuitry needed to decipher the signals after they have passed down the line

Modem stands for Modulator/Demodulator What it does is take the input from the computer as a series of on/off voltages and convert them into tones (modulation) To receive data, the modem takes the tones and converts them back into voltages that the computer can read (note that this process of using two tones is also known as frequency shift keying or FSK)

The cost of using a modem depends on what you use it for If you are using the general free bulletin boards then the only costs are the telephone charges Other systems available are Micronet/Prestel which costs £16 50 per quarter subscription plus a time charge of 6p per minute Mon to Fri 8am to 6pm and Sat 8am to 1pm Other times there is no time charge though you can pay for pages offered by information providers (IPs) The telephone charges are just the cost of a local call since Prestel have computers all over the country

Compunet is available for C64 users though you do have to buy a special modem (approx £80) which could be used at a later data to access Prestel The charges depend on the user status you require but vary from £7 50 to £15 Another system is MUD (Multi User Dungeon) which is an on line adventure game played by a number of players at once It costs £1 75 an hour to play

Try reading our regular Communications page to keep up to data with news and information in this up and coming area of home computing

MSX books

J Trinder of Wallingford Oxon writes

Q I am the owner of a Sanyo MPC-100 and try as I might, I can't seem to get any MSX information I have written to Haymarket publications as they offer a starter pack with the computer, they also mention an *MSX Computing* magazine but I have heard nothing from them.

Could you suggest some sources of information for this machine?

A Probably the best book available for the MSX machines is *The Complete MSX Programmers Guide* from Melbourne House As far as I know the magazine you mention is bi-monthly and the editorial address is Haymarket Publishing Ltd 38-42 Hampton Road Teddington Middlesex TW11 0JE Tel 01-977 8787

Disc troubles

Al Straker of Willesden, London writes

Q I am a Sinclair Spectrum owner with a wish to buy a disc drive, and a decent printer Everything was looking good on choosing said items until I 'cracked', and bought a Commodore 64 secondhand – without a cassette or disc or manuals etc.

My question is:

a) How can I hook up my Ferguson data recorder cassette to the Commodore while I save for a disc drive?

b) when I can afford it, is there a disc drive that will suit both Sinclair and Commodore machines? I know I will need suitable interfaces, but with these, can you suggest a drive that will work with both?

A In answer to your first question, the C64's cassette interface is a little unusual and the signals that are sent from the cassette to the computer need to be shaped so that they can be read As far as I know there are a number of interfaces available to do this, the best place to look is in the small ads in the Commodore magazines

Your second problem is rather more difficult to solve in fact probably impossible The Commodore 64 uses a serial disc drive ie all information from the drive is sent a bit at a time to the computer Spectrum disc interfaces are parallel so the data from the drive is sent in bytes, there is also no set standard

The other problem is that the only disc drives that will work with the Commodore and load commercial software are Commodore's own make (1541) So, unless there is an interface available for the Spectrum that will allow it to work with the 1541 (and I don't know of one) there is no way you are going to be able to use one disc drive for both machines



New bulletin boards for home computer users

David Wallin with five of the newest communications boards available

My mailbag has contained a numbers of letters from Bulletin Board sysops so this week we'll go through some of the new ones But first some bad news

Marcus Anselm has raised the price of his FBBS – Finchley Bulletin Board Software (budget bulletin board software as I described it a couple of months back) from £10 to £20 so it s no longer quite so budget but still about the cheapest package around for the SBC

Now for the good news the version of FBBS now being sold is V2 0 which has bugs of previous versions ironed out Not only that but it now has properly printed instructions, rather than the rough photocopied sheets supplied previously

I have had a few requests for Marcus s address Sorry, but he wishes it kept a secret he has though, given me his Prestel mailbox number where he can be contacted if you have trouble getting onto the board The mailbox number is 919993304 If for some reason you can t reach him on Prestel or Marctel send me the letter and a stamped envelope and I'll forward it to him as soon as I receive it

Lastly on the subject of FBBS, I have been asked by Oftel (Office of Telecommunications) to point out that two of the modems that FBS works on, the Demon Modem from Walkbury Consultants and Watfror Electronics' Le Modem are unapproved (Prohibited) for direct connection with the PSTN (Public Switched Telephone Network – BT phone lines) and as such should not be used on the PSTN

New Bulletin Boards

The first one is Access which runs on an IBM PC It s open 24 hours a day seven days a week You can ring it on Worcester (0905) 52536 and any of the following speeds, V21, V22, V22bis or V23 (330/300bps, 600/600bps, 1200/1200bps or 1200/75bps) There are about 10-15 sections and 20 file sections including stories, sales and wants etc. Unfortunately, there s a £5 registration fee which is a bit high for a B (most are £1 or £2) but still peanuts compared to Micronet (over £60) Don t forget that this sysop uses more expensive equipment than most, with an IBM PC and a multi-speed modem and so it's understandable that there is a slightly higher charge I personally have never successfully logged on to access, there has always been bad line noise but still, why not give it a ring?

The second board is Prometheus – an astronomical board! It contains three distinct sections a database of astronomical records a monthly update of events in the night sky, and a bulletin board for users which includes club news personal observations buying and selling, a picture gallery and soon a commercial section

Even if you re not star-mad then the Board s worth a ring, but for the astronomers and stargazers out there then this board is a must It s a viewdata board and the number is 01-300 7177 The board should now be running on 24 hours, If it doesn t answer then wait till after 6 00pm

The next two boards are for Apple Macintosh users and I was told of both of

The CBM64 comms pack

them by Lee Nickeas The first is Mactel (not to be confused with Marctel) which is available on 0602 817626 The second is The Green Box on 0602 811950 Both boards are 1200/75, 8N (8 bit word no parity – although Lee omitted the stop bits I would say one stop bit, so it s 8N1), 24 hours and run by Paul Beaumont and David Nicholson For Mac users there's tons to download and full subscription is worth while, for non-Mac users, it may not be worth subscribing Both boards are in Nottingham

Next there's NBBS Cheshire which is both 300/300 and 1200/75 The number is 0270 767025 This board is not new but Gary Carter (not the sysop, the sysop is Dave Jackson) wrote to me because he feels the board deserves extra credit due to its special Amstrad section Gary wants lots of Amstrad users to log on and upload software for others to download

The next board is a Micron board Micron is another kind of Bulletin Board software, like FBBS MBBS and TBBS Micron software will run on the BBC, Commodore 64 or the Spectrum Unfortunately, you can only access a Micron board with one of these computers Also special software is required The modems that can be used are Spectrum VTX 5000, BBC Prism 1000 & Commodore 64 Commodore modem The software is free from Micronet 800

Those of you with Spectrums who can I afford Prestel can get the software by sending £1 (postage and cassette cost) to Mr D J Every 5 Turbill Gardens, Chaddlewood Plympton, Plymouth, Devon PL7 3XF

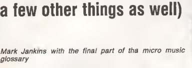
Now for the information about the board It's called Drake Net the phone number is 0752 330176 and it's on-line from 6 00pm till 9 00pm Monday to Friday These times will be expanded if the board becomes more popular (For the next couple of weeks it will be on ring and request) The board is run by Mr Every himself The features available include sales, wants, what s new news, telesoftware, mailbox, teleshopping and more Mr Every can also be contacted on Prestel mailbox 752330176 If you have trouble logging on More on Micron boards in the future

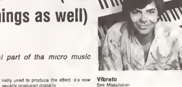
I have not been sent a letter about the last Bulletin Board but asked by Ade Truelove sysop of APAs (formerly CCCBB) to tell you about it The name of the Board is PUBB and it is run from a pub It s also probably unique in that it is run on a Tatung Einstein The sysop is Rosanne Shante The board is on-line from 8 00pm to 8 00am and has the following five sigs personal (E-mail), sales and wants Einstein talk Atari talk and general chat There are also five other sections, hints and tips game reviews, nights out (pub reviews) jokes and an odds and ends section The phone number is 0594 52287 1200/75 and 200/300 bps If you want to chat with the sysop then drop into the Wollaston Inn Lydney

If you have any queries, tips or comments to make about any aspect of micro communications, David Wallin would love to hear from you

Write to him at *Popular Computing Weekly* 12-13 Lithe Newport Street London WC2H 7PP

The meaning of music (and a few other things as well)





Mark Jenkins with the final part of the micro music glossary

Time for the final part of our glossary of micro music terms based on the *Acorn Music 500 Handbook* by Chris Jordan of Hybrid Technology

Note
One sound of a particular pitch and length The twelve notes of the Western scale are referred to by the letters A to G, plus sharp or flat signs and an indication of octave Notes defined by Midi transmissions are referred to by number from 0-127

Overtone
See *Harmonic*

Partial
A sinewave component of a more complex wave form

Phase
A position in the cycle of a waveform stated in degrees A phase difference is the separation in degrees between related points in the waveform of two sounds playing simultaneously Varying this angle using a pedal unit based on a very short delay line produces the swirling effect known as phasing

Pitch
Frequency, ie how 'high' or 'low' a note sounds

Release
See *ADSR*

Rest
A period of silence in a musical part having a length defined in the same way as the lengths of notes

Ring Modulation
Sound produced from two inputs consisting of the sum and difference of their frequencies As the resulting frequencies are mathematically but not musically, related they can be discordant and metallic-sounding so this effect (available on the Commodore 64 sound chip for instance) can be useful for bell-like sounds Named after the ring-shaped diode circuit originally used to produce the effect it's now usually produced digitally

Semitone
Smallest change in pitch found in most music, equal to one-twelfth of an octave On the keyboard, the interval form E to F is one semitone that from F to G is two semitones or one whole tone

Scale
The notes used in a particular key played in order over one or more octaves For instance the seven notes used in the key of A Major

Sustain
See *ADSR*

Synchronisation
Locking the pitch of one oscillator to that of another produces harmonic distortion if an attempt is made to bend the pitch of the "slave" oscillator Also locking together the tempo of two or more patterns running in real time such as a computer-based sequencer and a drum machine

Tempo
Speed of a piece of music, usually expressed in beats per minute

Tie
Musical notation indicating that two notes should be played as one long note

Time Signature
Indication of the composition of each bar of a piece Expressed as two figures the first indicating the number of beats the second their length So 3/4 indicates three quarter notes per bar (waltz time) 4/4 indicates four quarter notes per bar (common time) and 13/1 indicates something very very difficult to play

Timbre
Tone or quality of a sound as opposed to its pitch, defined on a synthesiser by the waveform mix filter pulse width and other settings

Tremolo
See *Modulation*

Vibrato
See *Modulation*

Voice
A sound-producing circuit capable of playing one note at a time Synthesisers may have one two, three, five, six eight 12 or 16 voices some such as the C64's Sid chip or the Casio CZ101 can create a different sound with every voice simultaneously (multi-timbral playing)

Waveform
The shape of a sound's vibration pattern over one cycle the waveform determines the Timbre of the sound and can be altered by filtering Simple waveforms are sine sawtooth triangle, square and pulse more complex waveforms can be built up by modulating or combining waves

Cheetah has announced the latest release for its value-for-money SpecDrum rhythm machine package It's an electronic percussion program tape (reviewed in detail elsewhere in this issue) which features powerful sounds from Simmons-type percussion units Price is £4 99

Dr Evelyn Mills of the Arthritis & Rheumatism Council is compiling an audio tape of computer music for sale in aid of ARC funds Classical, jazz, electronic or any other styles are acceptable and all contributors will be acknowledged on the tape C64 programs can be on program tape or disc while music for other micros should be on audio tape

Author and programmer Ian Waugh has already contributed some pieces and any readers who are interested or who would like more information should send contributions to Dr Mills at 43 Chancel Close, Nailsea Bristol BS19 2NE

The British Music Fair at London Olympia from August 1-3 includes a computer music stand featuring the C64, Apple Atari MSX Spectrum and other micros Shows run all day every day and detailed timetables will be available at the Fair Special tube and train services run to Kensington Olympia station and admission to the show is £3

Evesham Micros

PRINTER OFFERS

Check out these offers on top quality dot matrix printers. All the models offered are substantially reduced from the normal high street prices. Prices are fully inclusive of VAT, delivery and lead to suit any computer with centronics parallel printer port, eg Amstrad, B.B.C., Einstein, Atari ST, Oric, Dragon, Memotech or MSX. For the CBM 64/128 we supply a user port centronics cable. For Spectrum or QL owners an appropriate interface is supplied for an extra £20.00. For Atari models other than the ST an extra £39.00. Delivery is by insured receipted delivery, most orders are despatched the next working day after receipt, provided we have stock.

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Price includes Centronics lead to suit your micro.
Or to suit Spectrum with Kempston "E" interface £209.95.

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Now available at a really competitive price. This printer has a R.R.P. of £295 + VAT. Features are: 100cps, Friction and tractor feed, easy access dip switch, easy change long life ribbon and superb switch selectable NLQ mode. Take a look at these unretouched actual size print samples.

A sample of the impressive N.L.Q.
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CBM 128 compendium pack	£279.95	SS/DD £12.95	DS/DD £15.95
CBM music pack	£149.95	3.5" 3M DISCS (packs of ten)	
CBM MPS803 printer	£149.95	SS/DD £29.95	DS/DD £39.95
5.25" 3M DISCS (packs of ten)		3" DISCS (suit Amstrad)	
		BOX OF TEN	£39.00

New high specification printer just released. All the usual features PLUS easy front panel selection of most modes, semi automatic single sheet feed AND plug in interface cartridges. Choose between standard centronics parallel, IBM or Commodore. Ideal for Commodore owners who want the convenience of a CBM ready printer but may wish to change later, just buy a new interface cartridge for £39.00.

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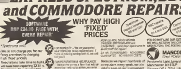
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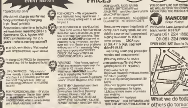
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New Releases

John Cook looks through this week's new arrivals

Amstrad

Program *The Hobbit* **Type** Adventure **Micro** Amstrad CPC **Price** £9 95 **Supplier** Melbourne House 60 High Street, Hampton Wick Kingston Upon Thames Surrey KT1 4DB

Program *Mermaid Madness* **Type** Arcade **Micro** Amstrad CPC **Price** £9 99 (tape) £14 99 (disc) **Supplier** Electric Dreams, 31 Carlton Crescent, Southampon SO1 2EW

Program *Nocturne* **Type** Adventure **Micro** Amstrad CPC **Price** £4 95 **Supplier** Alpha Omega CRL House 9 Kings Yard, Carpenters Rd London E15

Program *Wrath of Olympus* **Type** Adventure **Micro** Amstrad CPC **Price** £1 99 **Supplier** Alpha Omega CRL House 9 Kings Yard Carpenters Rd London E15

Program *Hunchback – The Adventure* **Type** Adventure **Micro** Amstrad CPC **Price** £8 95 **Supplier** Ocean, 6 Central St Manchester M2 5NS

Program *Knight Tyme* **Type** Arcade/Adventure **Micro** Amstrad CPC **Price** £2 99 **Supplier** Mastertronic, 8-10 Paul St, London EC2

Program *Molecule Man* **Type** Acade/Adventure **Micro** Amstrad CPC **Price** £1 99 **Supplier** Mastertronic 8-10 Paul St, London EC2

Program *Storm* **Type** Arcade/Adventure **Micro** Amstrad CPC **Price** £1 99 **Supplier** Mastertronic, 8-10 Paul St, London EC2.

Atari

Program *Lapis Philosophorum* **Type** Adventure **Micro** Atari XL/XE **Price** £14 95 (disc only) **Supplier** Ariolasoft 68 Long Acre, Covent Garden London WC2

Program *Quest for Eternity* **Type** Adventure **Micro** Atari XL/XE **Price** £2 99 **Supplier** Bug-Byte, Liberty House 222 Regent St London W1

Program *Spellbound* **Type** Arcade/Adventure **Micro** Atari 800XL/130XE **Price** £2 99 **Supplier** Mastertronic 8-10 Paul St London EC2

Things are looking up for the once software starved Atari owners – as more and more stuff written this side ofthe Atlantic comes on to the market

Spellbound is an excellent arcade adventure that started the David Jones ball rolling, whose Magic Knight games are characterised by being choc full of dialogue boxes and icons thus cutting out all the tedium of the worst text adventures This conversion though has been writtenby Adrian Shepherd – and congratulations to him – it's a gobdie A top ten hit on other formats this is highly recommended for any XL/XE fan looking for a few hours entertainment.

BBC/Electron

Program *The Hobbit* **Type** Adventure **Micro** BBC B **Price** £9 95 **Supplier** Melbourne House 60 High Street, Hampton Wick Kingston Upon Thames, Surrey KT1 4DB

Program *Commonwealth Games* **Type** Arcade **Micro** BBC/Electron **Price** £9 95 (tape) £11 95 (disc) **Supplier** Tynesoft, Addison Industrial Estate Blaydon Upon Tyne, Tyne & Wear NE21 4TE

Program *Vindaloo* **Type** Arcade **Micro** BBC/Electron **Price** £7 95 (tape) £9 95 (disc) **Supplier** Tynesoft Addison Industrial Estate Blaydon Upon Tyne, Tyne & Wear NE21 4TE

Program *US Drag Racing* **Type** Simulation **Micro** BBC/Electron **Price** £6 95 (tape) £8 95 (disc) **Supplier** Tynesoft, Addison Industrial Estate Blaydon Upon Tyne, Tyne & Weer NE21 4TE.

Program *Cricket* **Type** Arcade **Micro** BBC/Electron **Price** £2 99 **Supplier** Bug Byte Liberty House 222 Regent St London W1

C16/Plus 4

Program *Project Nova* **Type** Arcade **Micro** C16/Plus 4 **Price** £7 95 **Supplier** Gremlin Graphics, Alpha House, 10 Carver St Sheffield S1 4FS

Program *Droid One* **Type** Arcade **Micro** C16/Plus 4 **Price** £2 99 **Supplier** Bug-Byte Liberty House, 222 Regent St London W1

Pick of the week

Caught by the Trap

Program *Trap* **Type** Arcade **Micro** CBM 64 **Price** £9 95 (tape or disc) **Supplier** Alligata Software 1 Orange St Sheffield S1 4DW

Believe it or not one sure way to separate a great arcade game from a merely good one is to use the ancient *Popular* benchmark of the blister quotient Ask any ardent arcade fan – and they will proudly display their *Defender* blister (right side of the top joint of the middle finger of the right hand usually) or the *Pacman* blister (same finger lower down) or whatever

These scare are caused by a combination of time spent on the machine and the strength of grip used on the joystick – almost invariably directly proportional to the tension induced by the game

(Note there are similar benchmarks used for adventure games the one in widest use being the 'Pixie rating' – roughly the square root of the number of men in white coats it takes to drag you away from the keyboard divided by the number of elves you claim to be on first name terms with, all multiplied by the number of months you spent convalescing in Bournemouth)

In any case, *Trap* s blister quotient has just gone off the scale

All this means that Tony Crowther has stopped messing around with silly projects like *William Wobbler* (the programmers equivalent of 40 days in the wilderness) and gone back to his coding roots

Trap is a shoot-em up A killer of a shoot em up

There is a scenario (plus the most hilarious cassette inlay for weeks with enigmatic state-of-the-art posers like 'Can violent aggression and mindless destruction every be justified in the name of peace?) – but who cares about that?

The only question with any significance as far as this one goes is, Will I run out of sticking plaster for my thumb (right hand left side of second joint) before I run out of 10ps for the meter?

Program *Oblido* **Type** Arcade **Micro** C16/Plus 4 **Price** £1 99 **Supplier** Mastertronic, 8-10 Paul St, London EC2.

Commodore 64

Program *The Hobbit* **Type** Adventure **Micro** CBM 64 **Price** £9 95 **Supplier** Melbourne House, 60 High Street, Hampton Wick Kingston Upon Thames, Surrey KT1 4DB

Program *ICUPS* **Type** Arcade **Micro** CBM 64 **Price** £8 95 **Supplier** Thor Software 74 New Oxford St, London WC1

Program *Video Poker* **Type** Strategy **Micro** CBM 42 CPC **Price** £1 99 **Supplier** Mastertronic, 8-10 Paul St London EC2

Program *Jet Strike Mission* **Type** Arcade **Micro** CBM 64 **Price** £1 99 **Supplier** Alpha Omega, CRL House, 9 Kings Yard Carpenters Rd London E15

Program *Arac* **Type** Arcade/Adventure **Micro** CBM 64 **Price** £9 95 **Supplier** Addictive Games, 10 Albert Rd, Bournemouth Dorset BH1 1BZ

Program *Mermaid Madness* **Type** Arcade **Micro** CBM 64 **Price** £9 99 (tape) £14 99 (disc) **Supplier** Electric Dreams 31 Carlton Crescent, Southampon SO1 2EW

Program *Lapis Philosophorum* **Type** Adventure **Micro** CBM 64 **Price** £14 95 (disc only) **Supplier** Ariolasoft 68 Long Acre Covent Garden, London WC2

Program *Heart of Africa* **Type** Strategy **Micro** CBM 64 **Price** £14 95 **Supplier** Ariolasoft 68 Long Acre Covent Garden London WC2

Program *Mail Order Monsters* **Type** Arcade **Micro** CBM 64 **Price** £11 95 (tape) **Supplier** Ariolasoft 68 Long Acre Covent Garden, London WC2

Program *Hunchback – The Adventure* **Type** Adventure **Micro** CBM 64 **Price** £8 95 **Supplier** Ocean 6 Central St, Manchester M2 5NS

Program *Souls of Darkon* **Type** Adventure **Micro** CBM 64 **Price** £2 99 **Supplier** Bug-Byte Liberty House 222 Regent St London W1

Program *Dragon s Lair* **Type** Arcade **Micro** CBM 64 **Price** £9 95 (tape) £13 95 (disc) **Supplier** Software Projects Bearbrand Complex, Allerton Rd, Woolton, Liverpool L25 7SF

Who d be a princess eh? No sooner than you fall in love and set the date with your Beau you get carried off by a Dragon Surprising that in this day and age the post is still so much in demand

In *Dragon s Lair* the princess is called Daphine and you Dirk the Daring (I can see the named sunstrip together with the furry dice on the Royal coach as I write) have to rescue here from the Evil beast s clutches Well done that man But what makes *Dragon's Lair* interesting in that firstly it has been pushed out by Software Projects (a company that recently hasn't been so much 'resting but brain dead – and It is a conversion of an arcade mega-hit of a few years ago whose graphics were on laserdisc

It was termed an interactive cartoon as the action consisted of pre-recorded cartoon sequences with decision points where you had to do something (left, right, up down or fire) There was usually only one correct action the others leading to a more or less gory death scene

Dragon s Lair the computer game is a bit better than that – It's not all one choice, split second death or glory stuff for a start. The graphics (obviously not a patch on the original – how could they be?) are good rather than stunning the sound competent as opposed to brilliant and although the gameplay is better than the original in some ways, I found the whole thing a little uninspiring

Still memories of wet afternoons spent in seaside resorts will assure it does well enough – and it's nice to see an old name back on the scene

Out August 1st with versions planned for Spectrum and Amstrad

MSX

Program *The Hobbit* **Type** Adventure **Micro** MSX **Price** £9 95 **Supplier** Melbourne House 60 High Street, Hampton Wick Kingston Upon Thames Surrey KT1 4DB

Program *Knight Tyme* **Type** Arcade/Adventure **Micro** MSX **Price** £2 99 **Supplier** Mastertronic, 8-10 Paul St, London EC2

Program *Molecule Man* **Type** Acade/Adventure **Micro** MSX **Price** £1 99 **Supplier** Mastertronic 8-10 Paul St London EC2

PCW 8256/8512

Program *Lord of the Rings* **Type** Adventure **Micro** PCW 8256/8512 **Price** £24 95 (disc) **Supplier** Melbourne House 60 High St Hampton Wick Kingston Upon Thames Surrey

The time is long ago The place Middle Earth The scene, Frodo s house The players – Frodo Sam and Pippin You start as Frodo You take the food and bottle from the cupboard Now the fun starts

Me Give the food and give the bottle to Sam

PCW You give the food to you You give the bottle to you

Me Give the food and bottle to Sam

PCW You give the food to you You give the bottle to you

Me Give the food to Sam and give the bottle to Sam

PCW You give the food to Sam You give the bottle to you

Me (sigh – turns off computer)

The 'magnificent sequel' to *The Hobbit*, namely *Lord of the Rings* is now available text only for the 8256/8512 It costs almost £25

Bargepole job

Spectrum

Program *The Hobbit* **Type** Adventure **Micro** Spectrum **Price** £9 95 **Supplier** Melbourne House 60 High Street, Hampton Wick Kingston Upon Thames Surrey KT1 4DB

Program *Dynamite Dan II* **Type** Arcade **Micro** Spectrum **Price** £7 95 **Supplier** Mirrorsoft 74 Worship St London EC2A 2EN

Program *Action Reflex* **Type** Arcade **Micro** Spectrum **Price** £7 95 **Supplier** Mirrorsoft, 74 Worship St, London EC2A 2EN

Program *Mermaid Madness* **Type** Arcade **Micro** Spectrum **Price** £8 99 **Supplier** Electric Dreams, 31 Carlton Crescent, Southampon SO1 2EW

Program *Terrors of Trantoss* **Type** Adventure **Micro** Spectrum **Price** £8 95 **Supplier** Ariolasoft, 68 Long Acre, Covent Garden London WC2

Program *Jock and the Beanstalk (+ Sunrise over Bethselamine)* **Type** Adventure **Micro** Spectrum **Price** £1 50 **Supplier** Armadillosoft, 31 Marford Hill Marford Wrexham Clwyd LL12 8SW

Top Twenty

1	(–)	Leaderboard	US Gold
2	(4)	Jack the Nipper	Gremlin Graphics
3	(1)	Ghosts and Goblins	Elite
4	(2)	Green Beret	Imagine
5	(5)	Kung Fu Master	US Gold
6	(6)	Molecule Man	Mastertronic
7	(12)	Knight Games	English
8	(3)	Kik Start	Mastertronic
9	(6)	Ninja Master	Firebird
10	(7)	Formula One Simulator	Mastertronic
11	(–)	Knight Tyme	Mastertronic
12	(–)	Speed King	Mastertronic
13	(19)	World Cup Carnival	US Gold
14	(19)	Elite	Firebird
15	(11)	Way of the Tiger	Gremlin Graphics
16	(–)	Biggles	Mirrorsoft
17	(–)	Bomb Jack	Elite
18	(14)	Commando	Elite
19	(–)	Spindizzy	Electric Dreams
20	(13)	Theatre Europe	PSS

Speed King – back in the chart

Leaderboard – straight in at number one

Top Tens

All figures compiled by Gallup/Microscope

Amstrad

1	(4)	Elite	(Firebird)
2	(1)	Kane	(Mastertronic)
3	(8)	Green Beret	(Imagine)
4	(–)	Molecule Man	(Mastertronic)
5	(–)	Storm	(Mastertronic)
6	(2)	Harvey Headbanger	(Firebird)
7	(–)	Jack the Nipper	(Gremlin)
8	(–)	Batman	(Ocean)
9	(8)	Kung Fu Master	(US Gold)
10	(3)	Radzone,	(Mastertronic)

Molecule Man enters the Amstrad chart

Commodore 64

1	(–)	Leaderboard	(US Gold)
2	(2)	Green Beret	(Imagine)
3	(4)	Knight Games	(English)
4	(1)	Ghosts and Goblins	(Elite)
5	(–)	Speed King	(Mastertronic)
6	(3)	Thrust	(Firebird)
7	(7)	Ninja Master	(Firebird)
8	(6)	International Karate	(System 3)
9	(–)	Bump Set Spike	(Mastertronic)
10	(8)	Way of the Tiger	(Gremlin)

Atari

1	(1)	Kik Start	(Mastertronic)
2	(10)	Beer Belly	(Americana)
3	(3)	Vegas Jackpot	(Mastertronic)
4	(–)	Nuclear Nick	(Americana)
5	(7)	Last V8	(Mastertronic)
6	(8)	Scooter	(Americana)
7	(5)	Cloak of Death	(Bugbyte)
8	(–)	Hulk	(Americana)
9	(–)	Fighter Pilot	(Digital Int)
10	(–)	New York City	(Americana)

BBC

1	(–)	Ian Botham	(Tynesoft)
2	(6)	Air Wolf	(Elite)
3	(–)	Cricket	(Bugbyte)
4	(–)	Fist	(Melbourne House)
5	(9)	Star Force 7	(Bugbyte)
6	(1)	Commando	(Elite)
7	(8)	Phantom Combat	(Doctor Soft)
8	(–)	Savage Pond	(Bugbyte)
9	(–)	Speech	(Superior)
10	(–)	Yie Ar Kung Fu	(Imagine)

Spectrum

1	(2)	Jack the Nipper	(Gremlin)
2	(4)	Kung Fu Master	(US Gold)
3	(1)	Ghosts and Goblins	(Elite)
4	(3)	Molecule Man	(Mastertronic)
5	(6)	Ninja Master	(Firebird)
6	(8)	Green Beret	(Imagine)
7	(7)	Knight Tyme	(Mastertronic)
8	(5)	Theatre Europe	(PSS)
9	(–)	Heavy on the Magick	(Gargoyle)
10	(–)	Rebel Star	(Firebird)

NEXT WEEK

● Hardware

Saga Systems has deservedly earned acclaim for its alternative keyboards for the Spectrum Chris Jenkins looks at the latest, the Saga 2001

With the price of IBM compatibles dropping all the time, John Mewhood investigates one of the cheapest – a DIY PC compatible kit

● Games

A special preview of *War Hawk*, forthcoming from Firebird's Silver range Plus a range of tips and pokes for Imagine's *Green Beret*, courtesy of Tony Kendle

● Plus

Commodore 64 owners mustn't miss the second part of our machine code monitor listing

If you miss *Popular* next week, you'll be missing out Better order your copy now

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